

LOWELL—
AN INDUSTRIAL DREAM
COME TRUE

By H. C. MESERVE

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Francis C. Lowell
DIED 1817.

(Courtesy of C. J. H. Woodbury)

The only likeness extant of Francis C. Lowell. This silhouette was found back of a picture in the office of the Boston Manufacturing Company, at Waltham, Massachusetts, by the late A. M. Goodale, who was long the agent of the company.

LOWELL—
AN INDUSTRIAL DREAM COME TRUE

By
H. C. MESERVE, *Secretary*
THE NATIONAL ASSOCIATION OF
COTTON MANUFACTURERS



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COTTON MANUFACTURERS

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To the
OFFICERS *and* MEMBERS
of
THE NATIONAL ASSOCIATION OF
COTTON MANUFACTURERS
who gave the opportunity, provided the theme,
and furnished the inspiration
for this book



PREFACE

THIS book has grown out of a paper by the undersigned read at the 113th meeting of The National Association of Cotton Manufacturers, held at Atlantic City, October 4 and 5, 1922. It was originally called "The Development of a Mill City."

The chapter on "Cotton" and those leading up to the founding of Lowell were included in order that the background of the industrial picture might be more complete.

Owing to the exacting demands of an exceedingly active business life, there has been no opportunity for cultivating the art of fine writing. If there is any merit in the work it lies in the fact that it is a plain unvarnished tale of a very remarkable industrial dream developed into a still more remarkable fact.

The textile industry, which stands first in the industries of the country in the number of those employed, has retained all the conservatism which characterized its founders. It is in the belief that it has also the same broad vision which out of an idea built what has proved to be a great city, that I have told this story.

I desire to acknowledge my great indebtedness to the members of my staff for their co-operation, over and above their routine work, in the many details connected with this book.

H. C. MESERVE.

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CHAPTER I

EARLY HISTORY OF COTTON

THE use of fiber to manufacture cloth which emerged into the art of weaving was undoubtedly an early discovery in the history of man. Little if anything, however, is known of the first use of the cotton plant. It is evident that fabrics woven from cotton were in use in India and China centuries before the Christian era, and that the natives of these countries were skillful in the art of weaving cloth suitable for their needs.

As early as 800 B. C. there is record of cotton fiber being used by the Hindoos. For instance, in the digest of ancient laws by Mana it is prescribed that "the sacrificial thread of the Brahman must be made of cotton, so as to be put over the head in three strings." Again, in these laws, it states, "Let a weaver who has received ten palas of cotton thread give it back increased to eleven by the rice water and the like used in weaving." The punishment for stealing cotton thread was given as a fine of three times the value of the article stolen.

Herodotus speaks of the trees which grew wild in India, the fruit of which was a "wool" used by the Indians in making their clothes. This "tree" was no doubt the cotton plant and the "fruit" or "wool," the cotton boll. He further refers to Xerxes' army as being clothed in cotton.

About 500 B. C. cotton was brought to Europe from India by Alexander the Great, and from then on the Greeks wore clothing made of it.

Handy states that from 1500 B. C. until about a thousand years after the beginning of the Christian era, India was the center of the cotton industry. "The cotton cloth which the Indians produced from a short fiber with primitive distaffs and rude looms was not equaled until the last half century. Some of their muslins possessed wonderful delicacy of texture."

In the records of ancient times in India two Arabian travelers, writing of India, are quoted as follows,—“In this country they make garments of such extraordinary perfection that nowhere else are the like to be seen. These garments are for the most part round, and woven to that degree of fineness that they may be drawn through a ring of moderate size.”

A Portuguese visitor to India soon after the discovery of the passage around the Cape of Good Hope speaks of “the greatest quantities of cotton cloths admirably painted, also some white and some striped, held in highest estimation.” In his *Travels*, Tavernier speaks of “calicuts” so fine that they could hardly be felt in the hand, the spun thread of which was scarcely to be discerned.

Before cotton was taken to Europe in 500 B. C., it was introduced into China at the time of the conquest by the Tartars. However, although trade was active between India and China, it was not for several centuries that the Chinese cultivated cotton to any extent, nor did they import much of the manufactured cloth. Marco Polo, in his travels, which included several years spent in China, makes no mention of cotton, but speaks of silk as the usual dress of the people.

Records also indicate that the cotton plant was known in Africa, more particularly in Egypt, as well as in southern Asia. Handy states that “although much has been written to show that the ancient Egyptians knew nothing of the cotton plant, using only flax in weaving, it seems probable that this opinion is based on too narrow an interpretation of the terms used by classical authors and the idea that both flax and cotton were never used by the same people. The fact is, he states, ‘both flax and cotton were used, alone and mixed, by both the Egyptians and Indians.’

“Egypt was one of the most ancient as well as most populous empires of antiquity, and her inhabitants were early compelled to turn their attention to other than agricultural occupations; so that the various industries were well known

from the date of the earliest traditions, and among them none were more developed than weaving. While flax was probably the most common article used by Egyptian weavers in the manufacture of cloth, and linen was in fact the material of which the clothing of the people and the wrappings of their dead were usually made, it appears quite arbitrary to state that the Egyptians knew nothing of cotton, and consequently made no use of it in ancient times, for the probability is that it was through the commercial and industrial activity of this people that cotton was brought to the shores of the Mediterranean Sea."

Knowing that the Egyptians were adventurous sailors, with a lively trade from ports on the Red Sea with those on the western coast of India, it goes almost without saying that they brought home many of the fabrics made from cotton by the Hindoo weavers. The cotton plant also grew in Egypt, as Pliny speaks of the robes of Egyptian priests, in the era immediately following the life of Christ, as being beautiful garments "woven from down wool spun into thread, the wool of which was cotton growing in upper Egypt toward Arabia."

There are many indications of the use of cotton on the west coast of Asia, particularly in the region of Palestine. Pliny, also mentions that the country about Jericho was noted for its production of cotton. Another historian, Forbiger, says that Hierapolis, in Syria, was formerly known as Magog, which word, according to later translation, should be spelled Mabog,—cotton town. Still another historian, Movers, in a history of the Phoenicians states that this people conducted trade with the rich tribes of Arabia, furnishing them with large quantities of cotton goods.

Cotton and some kind of cloth were probably introduced into Greece about the time of Alexander the Great, for, when invading India, he no doubt observed that the people used it almost entirely for clothing, etc., and it is only

natural to assume that he brought away with him many articles made of cotton fiber. Before this time, or as early as 1200 B. C., the Greeks were very skillful in the art of spinning and weaving, although the material used was generally wool. Later, they used linen, and after cotton became known to them they were soon able to produce a fabric as fine as that woven by the Phoenicians and Hindoos.

COTTON MANUFACTURE IN EUROPE

Cotton was introduced into Europe, first into Italy and Spain, from Egypt by Arab traders, possibly early in the history of the Christian era, as there is no record of the plant having been cultivated in these countries prior to that time. At no time, however, has the cultivation of cotton nor the manufacture of its products been engaged in to any extent by the natives of these two countries; silk, linen and wool, are mentioned in the early history of Italy, France, and southern Europe, but there is no mention of cotton. In his history of cotton manufacture, Baines says: "I have not been able to ascertain at what time cotton began to be manufactured in Turkey in Europe; but there seems no reason to think that it was before the conquests of the Turks in Roumania, in the fourteenth century; nor could it have been much after, as the victorious settlers would naturally bring with them their own arts, and the use of cotton garments was then common in Asia Minor. The cotton plant found a congenial soil and climate in Roumania and Macedonia, where it is now (1835) cultivated to a great extent, and the spinning and weaving of the wool forms one of the most important branches of industry in that country."

Early references to manufactures in Spain imply that cotton, as well as linen and silk, was known in the ninth century, but not until two or three hundred years later was it manufactured to any extent. Then Granada was famed

for its cotton manufacture, a historian of that country stating that the cooccus with which cotton stuffs were dyed was found here, adding that "there was a great abundance of cotton as well for commerce as for use in manufacture, and the cotton garments made here are said to be superior to those of Assyria in softness, delicacy, and beauty."

Similarly, Barcelona was noted for its manufacture of cotton; its workers formed a guild in the thirteenth century and two of its streets have names which preserve the memory of the ancient locality of their shops.

Thus the manufacture of cotton in Spain was well established before it existed in Italy or other European countries, for it was not until the beginning of the fourteenth century that it was introduced into Venice. Handy states that in 1645 the English Society of Merchants and Adventurers traded in Venetian fustians while Antwerp also exported to England, about this time, cottons and cotton wool, which the merchants are said to have procured from Portugal.

COTTON MANUFACTURE IN ENGLAND

At just what time cotton manufacture was first introduced into England is not definitely settled. The first accurate statement is made by the author of "Treasure of Traffic," published in 1641. However, as pointed out by later writers, it is more than probable that the industry was well established before that date, as workers skilled in the art had fled from Flanders in the train of William the Conqueror's army and it is only fair to assume that they continued to pursue their occupations in their new homes.

Mention is made of it in records covering the thirteenth century (1212) and again early in the fifteenth century there is reference to the importation of cotton to the country.

There is little to indicate, however, that the industry experienced any appreciable growth for many years. For

one thing, the crudeness of the machinery for spinning made it impossible to produce any fine yarns. In fact, both spinning and weaving, which were done by individuals in their homes, were performed by the use of implements similar to those used two thousand years before. To state that the distaff was still in use is to give some idea of the primitive nature of the art at this period, while the loom was little better than the one used in India hundreds of years earlier.

Another hindrance to the growth of the industry was the distance of the finished goods from the market. Baines makes note of the fact that it was not until 1760 that Manchester merchants began to furnish the weavers in the neighboring villages with raw cotton and to pay a fixed price for the perfected web, in this way relieving the weavers of the necessity of providing themselves with material and seeking a market for their cloth, and also enabling them to work with greater regularity.

Up to this time the weavers had barely supplied the home demand, but after the impetus the industry received from the new arrangement, England began to export cotton goods. Immediately, the foreign demand increased, but then arose the problem of securing enough cotton yarn. To quote from Handy: "The spinners were producing already as much as their rude machines would permit, and additional spinners were not to be had. The demand for cotton thread exceeded the supply; the price of yarn rose with the demands of trade and the extension of the manufacture and operated as a check to the further increase of the exports. The trade had reached the point where hand carders, single thread spinning wheels, and the hand loom, requiring a man to each machine, were clearly inadequate to the service, and the cotton trade of Great Britain in the middle of the eighteenth century seemed to have reached its limit."

Then it was that Hargreaves, Arkwright, Crompton, Cart-

wright, and Watt invented the machinery which in time enabled the cotton industry to become one of the most important of the world. Their inventions, the carding engine, the spinning jenny, the spinning frame, the stocking frame, the power loom, used in connection with the steam engine, very shortly supplied the means of producing quantities of yarn and cloth. The raw material, however, continued to be limited, the West Indies and India supplying all that it was possible to obtain at this time.

CHAPTER II

COTTON IN AMERICA

The history of cotton in America begins with the history of America itself, for on the day of the discovery of the new continent, on October 12, 1492, Columbus makes mention in his diary of the fact that upon first landing the natives brought to him, among other things, skeins of cotton thread. "Afterwards when we were in the ship's boats," he continues, "they came swimming toward us, and brought us parrots and balls of cotton thread and spears, and many other things which they exchanged with us for other things which we gave them, such as strings of beads and little bells."

In later explorations of the newly discovered country he found the cotton plant growing abundantly, both in the West Indies where he first landed and on the mainland, and the inhabitants were weaving its fibre into cloth with considerable skill.

Later, in 1519, during his explorations into Mexico, Cortez used the cotton he found there to stuff the jackets of his soldiers in order to make them impervious to the arrows of the natives. Furthermore, among the presents sent by him to Charles V. of Spain were mantles, waistcoats, counterpanes and tapestries made from cotton fabrics. Indeed, cotton was the chief article of clothing among the Mexicans, as they had neither wool nor silk.

Pizarro found cotton in Peru in 1522. In his story of cotton, Handy states that he has seen a cotton blanket taken from around a Peruvian mummy. The fibres, to which some of the seed were clinging, were loosely spun into thick yarn and were in a good state of preservation.

In brief, it would appear that in Mexico, and in Central and South America, and occasionally in the Southern part of what is now the United States, cotton was known and used at the time of the settlement of America.

CHAPTER III

COTTON IN THE UNITED STATES

Curiously enough, the United States, the last to enter the list of the cotton growing countries, became in an incredibly short time the first in the amount produced.

The first mention of cotton growing in the United States proper is by DeVica, who found it in 1536 in the territory which is now the states of Louisiana and Texas. No effort to produce it, however, seems to have been made until shortly after the first English settlement at Jamestown in 1606. In a pamphlet entitled "*Nova Britannica; Offering Most Excellent Fruits of Planting in Virginia*," published in 1609, it is stated that cotton would grow as well in that province as in Italy. Bancroft, the historian, says that the first effort in cotton culture was made in Virginia in 1621, the seeds being planted as an experiment, and "their plentiful coming up" was a subject of interest in both America and England.

The next definite reference to cotton in this country was not until some years later, in 1666, when a tract was published in London relating that a plantation had been settled by the English at Cape Fear and that the settlers had "indigo, very good tobacco, and cotton wool."

Early in the eighteenth century cotton was being cultivated to some extent in the Carolinas, although it was confined to domestic use. Lawson, in a history of North Carolina, says: "We have not only provisions plentiful, but clothes of our own manufacture, which are made and daily increase, cotton, wool, and flax being of our own growth, and the women are to be highly commended for industry in spinning and ordering their housewifery to so great an advantage as they do."

Another historian, Pickett, says that in 1728 the colony of Louisiana, which at that time occupied nearly all of the southwestern part of the United States, produced cotton,

indigo, tobacco and grain, the fields being cultivated by slaves.

A rather remarkable feature of the early production of cotton in this country was that it was successfully grown so much farther north than it is now cultivated. Trench Coxe, of Philadelphia, states that it was grown, more in gardens than for manufacture, on the eastern shore of the Chesapeake Bay in Maryland, and that, during the Revolutionary War, it was cultivated for army use in Delaware and the southern part of New Jersey. Furthermore, at this time the home-grown cotton was sufficiently abundant in Pennsylvania to supply the domestic needs of that state. However, production on any scale was never attempted outside the boundary of the so-called cotton belt. Louisiana, Georgia, the Carolinas and Virginia more and more turned to the planting of cotton, encouraged thereto by climatic and soil conditions, as well as by legislative enactment. The provincial congresses of several of the southern states recommended that "all persons having proper land ought to cultivate and raise a quantity of hemp, flax and cotton, not only for the use of their families, but to spare to others on moderate terms."

In 1786, Thomas Jefferson wrote: "The four southernmost states make a great deal of cotton. Their poor are almost entirely clothed with it in winter and summer. In winter they wear shirts of it and outer clothing of cotton and wool mixed. In summer their shirts are linen, but the outer clothing cotton. The dress of the women is almost entirely of cotton, manufactured by themselves, except the richer class, and even many of these wear a great deal of homespun cotton. It is as well manufactured as the calicoes of Europe."

The greatest impetus to the cultivation of cotton was given by the war of the Revolution. One of the earliest results of the conflict was the cutting off of trade with England, which meant that the importation of manufactured

goods entirely ceased. To meet the home demand, however, Southern cotton growers planted more cotton, with the result that today the South Atlantic and lower Mississippi States are the source of about seventy per cent of the cotton supply of the world. This supply not only furnishes the raw material for the cotton manufacturing industry in this country, but it is one of the largest items of export.

The following table gives the production of cotton for the hundred years from 1790 to 1890, showing an increase from 4,000 bales to the banner crop of 1914 of over 16,000,000 bales.

Cotton Crops of the United States at Stated Periods

<i>Year</i>	<i>Bales—Each 500 pounds net</i>
1790	4,000
1800	96,000
1810	170,000
1820	360,000
1830	770,000
1840	1,288,000
1850	2,000,000
1860	4,582,000
1870	2,703,000
1880	6,062,000
1890	8,242,000
1900	10,123,027
1910	11,608,616
1914	16,134,930
1920	13,439,603
1921	7,953,641
*1922	9,615,000

*Estimated

CHAPTER IV

COTTON MANUFACTURING IN NEW ENGLAND

Cotton manufacturing in New England may be divided into three periods, as follows:

1. The years prior to 1776. During this time the cotton was prepared for spinning by carding with a pair of hand cards. The yarn was spun upon a wheel with a single spindle. The fabric was woven upon a common loom, the shuttle being held in one hand. This work was done in the homes.

2. The years between 1776 and 1814, marking the change from house spinning and weaving to the segregation into separate industrial buildings. This period was also notable because of improvements made in Arkwright's machinery and for the invention of the cotton gin by Whitney.

3. The growth of power-driven machinery and the development of the mill city.

FIRST PERIOD — PRIOR TO 1776

As early as 1638 an endeavor to manufacture cloth was made in this country. In a quaint old book by Edward Johnson, entitled "Wonder-Working Providences of Sion's Saviour in New England," is found the following:—

"At this time, the Lord brought over the zealous-affected and judicious servant of His, Master Ezekiel Rogers, who, with an holy and humble people, made his progress to the northeastward, and erected a town about six miles from Ipswich, called Rowley. These people, being very industrious in every way, soon built many houses to the number of about threescore families, and were the first people that set upon making cloth in this western world; for which end they built a fulling-mill, and caused their little ones to be

very diligent in spinning cotton-woole, many of them having been clothiers in England till their zeale to promote the Gospel of Christ caused them to wander.”

The fulling-mill referred to was doubtless the first one to be built in this country and its need was called forth by the fact that the difficulties and uncertainties of intercourse by vessels with England made the colonists desire to manufacture their own fabrics for clothes. This desire was made easier of fulfillment because of the unlimited and cheap supply of raw cotton it was possible to secure by trade with the West Indies.

In the Journal of Governor Winthrop, June, 1643, is the following entry:—

“Our supplies from England failing very much, men began to look about them and fell to the manufacture of cotton, whereof we had a store from Barbadoes, and of hemp and flax, wherein Rowley, to their great commendation, exceeded all other towns.”

For several years beginning with 1645, the General Court of Massachusetts ordered that each family should sow flax and hemp and preserve the seed in order to supply future needs. Furthermore, the Court provided by order, that a vessel be furnished and sent forth to those parts where cotton was to be obtained, and, on the return of the vessel, each plantation was to take its proportion of the cargo. This cotton, according to the order, “all hands, not necessarily employed on other occasions, as women, girls, and boys, shall be, and hereby are, enjoined to spin according to their skill and ability . . .” As further evidence of the compulsory demand of the government at that time that spinning be carried on, it is related that land was allotted to one William How in Chelmsford, Massachusetts, “provided he set up his trade of weaving . . .” That these orders were obeyed and furthermore that they were efficacious is evident, for by 1731 the merchants and manufacturers of England began to com-

plain of the efforts of the colonists to substitute for English goods fabrics of their own manufacture to such an extent that great injury was done to the commerce and industries of the mother country.

In order to investigate these complaints, the House of Commons, in 1731, through their Board of Trade, made an inquiry into "laws made, manufactures set up, or trade carried on, detrimental to the trade, navigation, or manufactures of Great Britain." The report made by the Board would indicate that they found no evidence to support the complaint of the British manufacturers that their trade was being injured by the competition in America, but, as the colonists were not very desirous of revealing the extent of their manufactures, it is possible that the true facts may not have been given to the Board of Trade investigators. Already the Colonies were chafing against the restrictions laid upon their trade and industries, and were showing an independence that was sensed even by the agents sent from England to procure the desired information.

In the meantime, spinning and weaving was not only carried on in the homes of the colonists to supply their individual needs, but as an industry of some size outside the home. The growth was stimulated by the arrival, in 1718, of a number of Protestants from the North of Ireland, who brought with them their handcards, spinning wheels, and looms. In the Memorial History of Boston, reference is made to the influence the coming of these immigrants exerted as follows:—

" . . . a great stir had been created in the town (Boston) by the arrival of a number of Irish spinners and weavers, bringing the implements of their craft. Directly the "spinning craze," as it was aptly called, took possession of the town, and the women, young and old, high and low, rich and poor, flocked into the spinning school, which, for want of better quarters was set up on the Common, in the open

air. Here the whirr of their wheels was heard from morning to night. Prizes were offered for the best work, and the enthusiasts went about proudly, clothed in the homespun products of their own hands."

Whether it was entirely due to the coming of these immigrants or not, it is evident from all records that the spinning and weaving industry was further stimulated at this time. A premium was offered by the General Court of Massachusetts Bay for sail-duck and linen made of domestic materials; bounties were requested by different individuals on all duck and canvas produced over a certain amount; loans were petitioned of the Court to aid in establishing the industry, although there is no record to indicate that one was ever granted. The most enduring of these signs of growth, however, may be found in the spinning schools which were set up in Boston for the instruction of children. The first of these schools was started about two years after the coming of the Irish, or in 1720, but it was not until some twenty years later that reference is made to them in public documents and newspapers of the time, indicating that they were still in existence. Particularly is there mention of a Linen Manufactory House, which was in reality a school for the instruction of women and children in spinning and weaving. This Society, which was located in a building on the corner of Tremont Street, at what is now known as Hamilton Place, seems to have provided employment for "those dependent on their manual labor for support." It flourished for several years, until the fall of 1768, when an effort was made to appropriate the whole building as a barracks for British troops. This attempt, however, was not successful. However, it seems to have lasted but a short time, perhaps a year or so, when a new organization, called "The Society for Encouraging Industry and Employing the Poor," was formed.

During this period encouragement of domestic manufactures, including fabrics, was manifested in many ways.

At a meeting of the inhabitants of Boston in Faneuil Hall in 1767, it was voted to take all prudent and legal measures to encourage the produce and manufactures of the Province. Similar votes were passed in other places, — Providence and Newport and also in Connecticut. It was advertised that “The senior class of 1768 scholars at the University in Cambridge have unanimously agreed to take their degrees, next commencement, dressed altogether in the manufactures of this country.” These and other evidences of increasing interest in the manufacture of textiles, not only in Massachusetts but elsewhere in the Colonies, and particularly in Pennsylvania, continued until the years of the Revolutionary War.

In the years immediately preceding the outbreak of the war, Arkwright was engaged in improving machinery for the carding and preparation of cotton for spinning. Despite a great deal of opposition to his improvements, they had aided the business in England to such an extent that, in 1774, an Act of Parliament was passed to prevent the exportation of cotton machinery, so that a monopoly of the manufacture could be secured for Great Britain.

During the War, intercourse with Great Britain was cut off. On its renewal when the war was over and this country was ready once more to turn its attention to manufacturing and trade, it was found that England was in possession of all the patents on machinery necessary to the extension of the business, while, in addition to the law against the exportation of machinery, there was also a law forbidding the emigration of mechanics and manufacturers. These restrictions made it extremely difficult to secure the information necessary to the successful conduct of the industry in this country.

SECOND PERIOD — 1776 TO 1814

So serious was the handicap resulting from the lack of

knowledge of recent improvements in cotton manufacturing machinery that various measures were taken to overcome it. By 1786, the Legislature of Massachusetts had succeeded in obtaining models of machinery showing some of Arkwright's improvements. Moreover, in the same year, a member from the House and one from the Senate were appointed to inspect any new machines that might be made in the Commonwealth, and in this way the machines made by Robert and Alexander Barr came to their attention. These two brothers had come from Scotland at the invitation of Colonel Hugh Orr, of Bridgewater, Massachusetts, who, according to Judge Mitchell's "History of Bridgewater," was responsible for the first introduction of cotton machinery into this country. Colonel Orr was a gunsmith and locksmith in his native land of Scotland, and, on coming to this country, engaged in the same occupation, eventually establishing a foundry and perhaps casting the first cannon. Immediately after the Revolution he became very much interested in the methods by which cotton fabrics were manufactured and it was then that he invited the Barr brothers to come to this country and construct, at his foundry, machinery for carding, roving and spinning cotton. It was these machines that were inspected by the committee from the Legislature. This committee reported so favorably upon them that a grant of two hundred pounds was voted to the Barrs to enable them to complete the three machines and to build others. The machines were completed, but the experiment resulted in failure. They were eventually sent to Providence, Rhode Island, where they came into the possession of Moses Brown, who was then operating a small mill at Pawtucket Bridge. Sometime later Mr. Brown employed Samuel Slater to organize a cotton factory in Providence. These same machines upon which endless experiments had been made were examined by Slater and condemned as worthless. He replaced them

with others which he constructed also from memory and which proved successful.

Before the arrival of Slater, however, another Englishman, Thomas Somers, had been endeavoring to interest some merchants in Baltimore in the matter of encouraging cotton manufacture in this country. Previously, at his own expense he had gone to England to secure machinery for carding and spinning, but had only succeeded in obtaining descriptions and models. To construct machinery from these models was his desire but, to do so, he needed financial assistance. Finding the Baltimore merchants reluctant to extend this help, he was led, on the advice of friends in Boston, to petition the Legislature of Massachusetts, in 1787, for aid. The Legislature granted him twenty pounds, which sum enabled him to begin the manufacture of cotton yarns and fabrics in a factory located at Beverly, Massachusetts, near Ipswich (1788). This, it is believed, was the first cotton factory to be opened up in New England.¹ The building was erected in the early fall of 1787 and by November first of the same year business had begun. (Walton says — “Before January 6, 1789, it was completed.”)

A newspaper of that time, the *Salem Mercury*, describes the factory as “a plain three story building of brick, measuring about sixty by twenty-five feet with a pitching roof, and a deep basement, in one end of which moved a heavy pair of horses to furnish rotary power.”

This mill at the time was considered to be one of the wonders of the state well worthy of a visit. Washington, in his tour of the North in 1789, makes mention of it in his diary, as follows: —

“Friday, 30th October — A little after eight o’clock I set out (from Salem) for Newburyport, and in less

1—The first in the United States was at Philadelphia, about 1775, the “Philadelphia Society for Promoting Manufactures and Useful Arts in Philadelphia.”

than two miles crossed the bridge between Salem and Beverly . . . After passing Beverly two miles, we came to a cotton manufactory. . . In this manufactory they have the new invented carding and spinning machines.”

After describing the process by which the cotton yarn is woven, he states that —

“In short, the whole seemed perfect, and the cotton stuffs which they turn out excellent of their kind,—warp and filling both cotton.”

These “cotton stuffs” mentioned by Washington were corduroys, bed tickings, cotton velvets, jeans, shirtings, sheeting, and table cloths. One of the employes, of whom there were about forty in all, stated in later years that he had never seen such tickings. “The blue was colored with the best indigo. The white was bleached upon a platform in the sun, and it sold for seventy-five cents, and three-fourths shirting for fifty cents per yard. His customers were principally from Salem and Newburyport.”¹

From all accounts, and they are very few, the Beverly Cotton Factory was in operation for about fifteen or eighteen years, or until the embargo placed upon shipping during the Napoleonic Wars destroyed the trade upon which Salem and Newburyport depended. The building itself remained until 1828 when it was destroyed by fire. Although it is inferred that the articles manufactured were of superior quality, yet the business never proved to be profitable, the loss at times being very great.

Other establishments for the manufacture of cotton came into being at about the time the Beverly factory was in operation, although none of them had a very long life. In 1788, the manufacture of sail-cloth was begun in Boston by the Boston Sail-Cloth Manufactory, closing about 1796. In 1789, factories were opened at Worcester and Haver-

1—Letter written by Joshua Herrick to Samuel Batchelder, 1863.

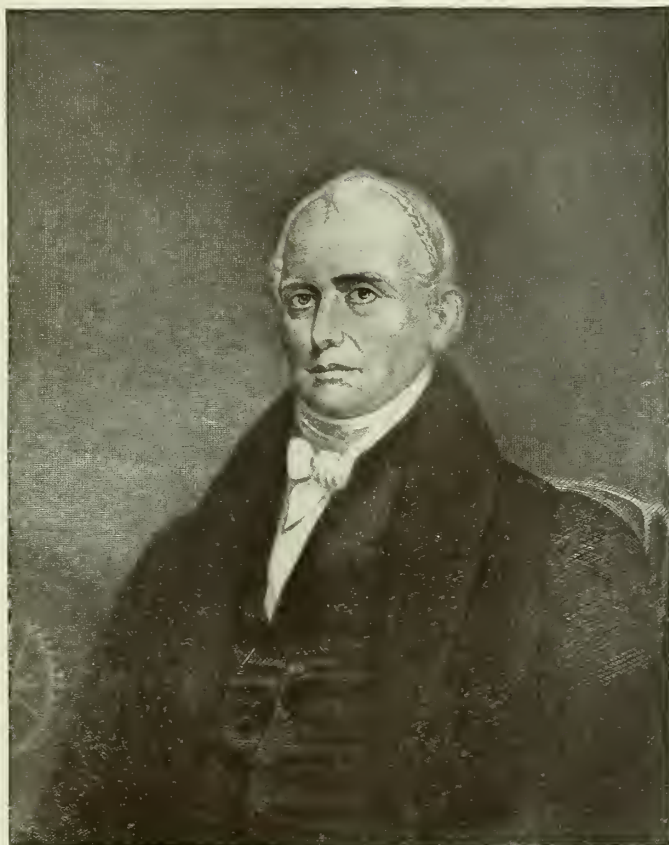
hill, the latter making duck. In 1790, Dr. Josiah Lathrop established a factory at Norwich, Connecticut. In 1791, David Buffum commenced the manufacture of cotton yarns and cloth in the basement of the State House at Newport, Rhode Island, but four years later the machinery was sold to Moses Brown and removed to Providence.

So far, however, the only machinery it was possible to secure was either a crude imitation of that in use in England or else rough models made by American inventors. No one had succeeded in obtaining one of Arkwright's machines, nor in successfully reproducing one in this country.

This is perhaps the main reason why the industry, although it had made some progress, had not grown as rapidly as it had in England. There the decided impetus to the industry was due to the experiments and improvements to the spinning jenny and other machinery made by Richard Arkwright since 1767, and their use in all of the cotton mills of the country.

To a youth employed in one of the English mills in the 80's we owe the success of the cotton industry in America. He introduced into America the Arkwright system of cotton machinery at a time when the impulse which it gave to cotton manufacturing was sadly needed.

This man, Samuel Slater (B. 1768) later called the "Father of the American Cotton Industry," was apprenticed when a mere boy to a cotton manufacturer at Milford, England. He showed such industry and skill that by the time he was eighteen years old he had become an overseer and was even then planning for the time when he should have an establishment of his own. From several sources he had become aware of the condition of cotton manufacture in America and with the foresight to apprehend that one of his knowledge and experience would without doubt be successful in a field which offered so many opportunities, he decided to emigrate. He was aware, of course,



Samuel Slater

that it was against the law for a skilled mechanic to leave the country, and also that it was forbidden to take or send out of the country patterns or models of machinery, so that it was necessary not only to leave in disguise but also to depend on his memory and skill for constructing in America the machines constituting the so-called Arkwright system. Accordingly, he made preparations and sailed from London as a farm laborer, landing in New York in the late fall of 1789, after a voyage of sixty-six days.

In less than a week he found employment but soon saw that it did not afford the opportunity he had come here to secure. It was then that circumstances led him to write and offer his services to Moses Brown, a retired merchant in Providence, of whom he had heard as being greatly interested in experiments in cotton manufacture for domestic use. Brown promptly replied and the result of the correspondence was that Slater left New York and went to Providence. From there, he was taken by Brown to Pawtucket to inspect the machines which so far had failed to give satisfaction. A very slight examination convinced Slater that they were worthless, which fact he communicated to Brown, proposing at the same time to construct new ones after the Arkwright patents "Under my proposals," he said, "if I do not make as good yarn as they do in England, I will have nothing for my services, but will throw the whole of what I have attempted over the border."

In three months from the time of his arrival in Pawtucket such progress had been made in the construction of new machines that ultimate success seemed assured. Articles of partnership were drawn up between Slater and William Almy and Smith Brown, who had previously conducted a small cotton mill in which Moses Brown was interested under the firm of Almy and Brown. The new company was called Almy, Brown and Slater, and, under the terms of partnership, Almy and Brown furnished the capital, while Slater, in return for constructing the machinery and

managing the factory, was to receive one-half of the profits and own one-half of the machinery. These terms seemed to be very advantageous to Slater, but, on the other hand, it was only by depending on his skill and memory that the complicated machinery needed could be constructed.

That he was successful is a matter of history. It took but a few months until perfected machines were in use and the success of the cotton manufacture in America assured. A new mill was built in 1790, now called the "Old Slater Mill," with later additions. In 1791, Alexander Hamilton, in his report as Secretary of the Treasury, said,— "The manufactory at Providence has the merit of being the first in introducing into the United States the celebrated cotton mill, which not only furnishes materials for that manufactory itself but for the supply of private families, for household manufacture."

About a year after the mill began to operate, Slater wrote to Hamilton that he could shortly supply the whole United States with yarn at a lower price than it could be imported from England. Then, a yard of cloth cost from forty to fifty cents; a few years later it cost nine or ten cents.

According to all records, the operatives in this early mill included children from eight to fourteen years old. The wages paid were very low, ranging from eighty cents to about \$1.40 a week. Naturally, at this wage, help was difficult to secure, and, furthermore, the children who were employed lacked training or education of any kind. To remedy this, Slater, who combined with his strict disciplinary measures a real interest in the welfare of those in his employ, started a Sunday School in his own house, teaching the children himself. This, it is believed, was the first Sunday School in America.

The business of Almy, Brown & Slater was successful from the start, the success being due in large part to Slater. Other mills were built and managed by him, while men trained under his management went to other localities and

established cotton factories. In time, Slater became the recognized head of the cotton industry in those parts of New England where the establishment of mills had been due to his example and success.

It has always been regarded as an interesting coincidence in the history of cotton manufacture that in the same year with the erection of the first mill by Almy, Brown & Slater, a machine was invented which was of material aid in establishing the success of what in time grew to be the foremost industry of the United States.

This machine was the cotton gin, invented by Eli Whitney in 1794, which may be briefly described as a mechanical hand which separates the cotton from its seed. Formerly this work was done by slaves on the cotton plantations in the South, the seed being picked from the cotton by hand in a necessarily slow and laborious manner. When it was suggested to Whitney that he make a machine to perform this work, he replied that "he had never seen either cotton or cotton-seed in his life," but he set to work and in a short time had made a machine that separated more cotton from the seed in one day than could be done in the usual manner in many months. As to its value, in the words of Judge Johnson, in the United States Court, "it would be a waste of time to dwell long upon this topic." "The whole interior of the Southern States was languishing," he further stated, in granting an injunction against an infringement of the patent, "and its inhabitants emigrating, for want of some object to engage their attention and employ their industry, when the invention of this machine at once opened views to them which set the whole country in active motion. From childhood to age, it has presented to us a lucrative employment. Individuals, who were depressed with poverty and sunk in idleness, have suddenly risen to wealth and respectability. Our debts have been paid off. Our capitals have increased, and our lands trebled themselves in value. We cannot express the weight

of the obligation which the country owes to this invention." This was said in 1807, or in slightly more than a decade after the invention was made.

When war was declared against England in 1812, the industrial outlook in the United States became for a time very gloomy. The trade which had grown up with England and the Continent suddenly ended when England forbade all commerce except under British licenses, while Napoleon, on his part, had decreed that all vessels sailing under such licenses should be confiscated. Between the two, American shipping was ruined. It was then that far-sighted American manufacturers began to realize that what seemed to be disaster might ultimately prove to be the means of greater industrial development. It occurred to them to supply the needs of this country with articles of home production, instead of depending, as heretofore, upon importations of manufactured goods from England. This was made easier because a great deal of the capital formerly used in shipping was withdrawn and made available for investment. Furthermore, prices of imported goods had reached an extravagant figure, cotton, for example, having increased from seventeen to about seventy-five cents a yard. Altogether, with the demand for goods, the availability of capital, and the high prices, it seemed a most favorable time, in the opinion of those interested in cotton manufacture, to extend the industry. As a further incentive, the use of the power loom was introduced into this country just at this time, without which it would have been much more difficult for the industry to survive the threatened ruin of the war.

This power loom was, in effect, the next logical step after the spinning jenny, for the introduction of the latter had so facilitated the production of yarn that a great deal more was on hand than could be woven. In other words, weaving was not keeping pace with spinning. For some time the problem received serious consideration in

England and was finally solved by a clergyman, Edmund Cartwright, who had never, he averred, "turned his thoughts to anything mechanical, either in theory or practice, nor had even seen a loom at work, or knew anything of its construction." However, in spite of his ignorance of mechanics, he succeeded with little effort in making a loom which, in its general principles, is similar to those in use to this day. Its chief value, of course, was that it enabled the weaving to be done at a much greater speed than could ever be attained by hand; but, in addition, great merit lay in the automatic stopping of the machine when the thread broke, heretofore this having been the main obstacle in the way of weaving by power machinery.

It was against the law to export to another country this loom, or other machinery in use in England. The small amount of machinery which did succeed in reaching America at this time was taken to pieces, mixed up with other articles, sent over on different vessels and assembled later in this country. As in the case of the Arkwright machines, however, the obstacle in the way of obtaining this latest improvement was overcome by rebuilding the desired model from memory. This was done by an American, Francis Cabot Lowell, who, although not actively engaged in the industry, had been for some time very much interested in the manufacture of cotton.

Perry Walton in his "Story of Textiles," states that within three years after Slater's completion of his first mill, ten other mills were wholly or partially completed in Rhode Island and before 1808 fifteen mills altogether had been put into operation.

About 1809 sales were made in Boston of the first cotton duck made in New England, if not in the world. The census of 1810 gives the number of cotton mills in New England as follows:

Massachusetts	54
Rhode Island	28
Connecticut	14
New Hampshire	12
Vermont	1
Total	<hr/> 109

In the other states of the Union there were 129 more mills, Pennsylvania leading with 64, so that there were in the country previous to the war of 1812, 238 cotton mills.

From 1809 to 1815 more than 50 mills were under construction in New England grouped in a compact area, extending from Providence northwest along the valley of Blackstone and southwest through the valley of Pawtucket and over the Rhode Island borders into neighboring townships of Massachusetts and Connecticut.

From 1809 to 1815 the mills around Providence increased from 41 to 169. The spindles in these mills increased from 20,000 to 135,000. This was largely the result of the Napoleonic wars which hastened the transition from flax to cotton throughout the world. Our war of 1812 closed in 1815 which year also marked the end of the Napoleonic era. With the resumption of imports foreign goods flooded our markets and closed most of the 169 mills which had grown up during the period of prosperity. The survivors were those which by reason of location, management, equipment and resources were enabled to continue the industry successfully.

THIRD PERIOD

The third period considers the growth of power-driven machinery and the development of the mill city as set forth in the following chapters, "The Founding of the Waltham System," and "Lowell."

CHAPTER V

THE FOUNDING OF THE WALTHAM COMPANY

Francis Cabot Lowell, the father of the modern cotton mill, was born in Newburyport, in 1775. He graduated from Harvard in 1793 and established himself early in life as a successful merchant in Boston. While in Europe for his health in 1811 he met, in Edinburgh, an old friend in the person of Nathan Appleton, also of Boston, and discussed with him the possibilities in the future of cotton manufacturing in America. After frequent conversations on the subject, it was their common opinion that this country need not depend upon England for fabrics, but that all that was needed for home consumption could be supplied if the industry were properly developed.

Lowell, therefore, before returning to America, visited one of the large textile centers of England and secured all the information obtainable in regard to methods and machinery, with a view to introducing all improvements of manufacture into the United States. In Manchester, he was permitted to inspect the machinery in use in the mills, although he was unable to secure any drawings. Notwithstanding this handicap he carried away definite ideas as to their construction for future development in the United States.

Immediately on his return, in 1813, he talked the matter over carefully with his brother-in-law, Patrick Tracy Jackson, who was also a merchant in Boston, and they decided to establish a cotton manufactory at some place in the vicinity where water power was available.

In this connection, Lowell now endeavored to re-invent, or adapt to the purposes he had in mind, the machinery used in the textile mills which he had visited in England. The result was that, among other things, he succeeded in rebuilding the power loom.

While studying the machinery and methods of cotton

manufacture in England, Lowell had not failed to observe the low character and unhappy condition of operatives in the European mills. He determined that these conditions should not prevail in America. In his opinion, an element of the greatest importance to the future success of the venture lay in the fact that here in New England was a supply of labor of such excellent character in comparison to that employed in European mills that with their help success was practically assured. The questions in his mind were — whether these native New Englanders were not of too high caliber to be easily persuaded to come to the towns and to work in the mills. What would be the effect on their character? Could they be induced to leave their country homes unless their welfare were securely safeguarded? All these questions were considered by Lowell, and to meet them he originated what later became known as the “Waltham System,” based on the conviction that efficient means must be adopted for the moral and physical welfare of the operatives.

Eventually, the company as it was then called, at its own cost established boarding houses under the charge of carefully selected matrons. Here every provision was made for the comfort and well-being of the young people who flocked from all over New England to the mill towns, where not only employment, but society and opportunities for advancement were afforded them. Religious instruction, free schools for the children of the employes, support of churches for the benefit of the operatives,—these were the beginnings of the welfare work which proved to be the pioneer of all such activity as it is conducted in the United States today.

Hitherto, all the cotton mills in the world were designed so that the spinning and weaving were done in separate establishments. In the mill which Lowell was planning to build he intended to arrange that all the processes for the conversion of cotton into cloth should be carried on within

the walls of one building, and, what was still more radical, the processes were not to be done by hand but by power.

To those not familiar with the investigations which Lowell had made and who were unaware of the plans which he had in mind, the project seemed to be impractical. Objections were raised on all sides, and, as stated by an associate a few years later, many of Lowell's nearest connections used all of their influence to dissuade him from the pursuit of what they deemed a visionary and dangerous scheme; but he was neither dissuaded nor discouraged.

In 1813, a company was formed, called the Waltham Company, which obtained an act of incorporation and purchased a water power at Waltham, on the Charles River. The charter authorized a capital of \$400,000, but it was intended to raise only about one-quarter of this amount until the experiment should be fairly tried. Of this sum, Lowell and Patrick Tracy Jackson subscribed the greater part. By the following year, the use of the power loom had proved so profitable a change from hand labor that the full capital was quickly subscribed. Mr. Jackson became the manager of the new company. The mill, a five-story brick structure, contained 3,000 spindles, and about 4,000 yards of goods were produced each week.

The first cloth made, was a heavy sheeting of Number 14 yarn, 37 inches wide, weighing less than three yards to the pound. It is an interesting fact that there was difficulty in selling this cloth. At first it was placed in a shop on Cornhill, Boston, kept by a Mrs. Bowers, who complained that although customers admired the quality and found no fault with the price, yet it failed to sell. Then, at the suggestion of Nathan Appleton, who had been interested in the mill ever since he and Lowell had met and planned together in Edinburgh, it was placed with B. C. Ward & Company, who sold it at auction for about 30c a

yard on a commission of one per cent. Appleton later became the selling agent for the mill.

By the time the war with England was ended the Waltham Company had the most extensive and prosperous cotton mill in the country, a prestige which it maintained for some years, or until the mills at Lowell were established. In the light of wages and hours of work as they exist today, it is particularly interesting to note that in those early days the operatives worked almost twice as many hours a week as they do now. Until 1850, 13½ hours a day, winter and summer, was the rule, or about 80 hours a week. "The factory bell awakened them at four-thirty A.M., and they went to work at five, then at seven went out to breakfast, returning at seven-thirty. At twelve they were dismissed for dinner, for which 30 to 45 minutes were allowed, then they returned and worked until half-past seven in the evening." Wages, also, were very small when compared with those paid today. The average was about \$1.25 a week, of which 75c was paid to the corporation for board. This mill is still in operation, since 1901 under the name of "The Boston Manufacturing Company," but as the Waltham Company it will long be noted as the pioneer in cotton manufacturing. All of the methods of operating a mill as they are in existence today were instituted here,—introduction of power machinery, process of manufacture in one building, mill organization, and welfare work.

All these the industry owes to the foresight and ability of Francis Cabot Lowell. It is most fitting that, in the city which bears his name, his ideas should have been developed to an efficiency beyond his dreams.

CHAPTER VI

LOWELL

Previous to the coming of the white man, the site of what is now the city of Lowell had been the capital of an Indian settlement called Wamesit. This settlement, the headquarters of the five great tribes which were found in New England,—the Massachusetts, Narragansetts, Pokonokets, Pequots and Pawtuckets — was chosen in the beginning by the Indians because of the abundant supply of fish to be found here. The first settlers called it Sturgeon River, Merrimack being the Indian name for sturgeon. At the time the settlement was first discovered by the white men it had a population of about twelve thousand, although this number was more than doubled at the seasons when the tribes gathered, as they periodically did, for council.

It was here that, as early as 1653, John Eliot gathered the Indians about him “beneath the trees of the forest, in sound of the rushing water,” and preached to them. With the coming of the white settlers the Indians began to decrease and in less than a decade they could be numbered by hundreds rather than by thousands. Land was first bought from them in 1686, two Englishmen making what is called the Wamesit Purchase, which consisted of a large lot of land west of the Concord River. Subsequently, other and smaller parcels were purchased and in time the Indians were entirely replaced by white settlers from the Massachusetts Bay Colony. By 1725, the Indian meeting-place had entirely disappeared and in its stead was a thriving town called Chelmsford, part of which later became Lowell.

At this time another settlement was flourishing to the northeast of Chelmsford, called Newburyport, a town which was primarily founded because of the unusual facilities

its location offered for shipbuilding. The location of this settlement was on the sea and at the same time adjacent to vast tracts of forest land. To secure the lumber for this industry was no doubt the first errand that brought the white men to the locality as for many years the principal occupation of the settlers was lumbering, the logs being floated down the river to Newburyport where they were used in the building of ships. For this purpose the Merrimack River was well adapted as the descent was rapid, in some places there being a fall of several feet. However, these very falls were the obstacle in the way of a smooth passage for other traffic, and finally, to overcome the difficulty encountered as the greatest of these falls (Pawtucket) which descended 32 feet, a canal was planned round it, a mile and a half long, with four locks. The first boat passed through in 1797 and it is related that the occasion was a matter of great interest throughout the country, hundreds assembling on the first lock to witness the passage. As soon as the boat containing the directors of the company which built the canal and their guests had entered the lock, its sides gave way and all were carried rapidly down the stream. However, no lives were lost and no one suffered beyond having an unexpected bath and a great fright, but the incident was long remembered, forming part of the history of the Pawtucket Falls Canal.

In the days when Lowell was experimenting with machinery in a room on Broad Street, Boston, he had associated with him, Paul Moody, an expert mechanic from Amesbury, who later became the manager, or, as it is now called, the agent of the Waltham mill. In a very few years after it was established the success of the company made it apparent that its interests should be extended, particularly in another situation where more water power was available. For some time Appleton and Jackson had been looking for a suitable location but nothing had been found. One day, in 1820, Ezra Worthen, a friend of Moody's,

who was connected with a manufacturing establishment at Amesbury, and who had long been impressed with the advantages of the water power of Pawtucket Falls some miles distant from Waltham, called at the mill of the Waltham Company to see Mr. Moody. Patrick Tracy Jackson happened to be there at the time and to him Mr. Worthen expressed a wish that the directors would set up a mill in some new place and employ him to conduct it. Jackson replied that this would be done if he would find a good water power, and immediately Worthen took a piece of chalk from his pocket and drew a map of the Merrimack River and Canal on the floor. The rude sketch was sufficient to impress Jackson; he called on Appleton and informed him that he had made inquiry and discovered that the stock of the Pawtucket Canal Company and lands necessary for using the water power could be bought reasonably, with the result that, after visiting the spot, the site was eventually secured.

The site of Lowell was chosen purely for textile purposes. The definite plan grew out of its location at available water power. Other advantages and disadvantages were weighed over against this matter of primary importance. The practicability of textile manufacturing at this particular place was the determining factor. It was a dream community before it was a fact, but it became a real community because of its adaptability to the necessities of the purpose for which it was created.

These fundamentals must be kept in mind — that it was to be a community devoted to textile manufacturing; that it was to grow by the development of this single industry; that while its future was still on the knees of the gods the enterprise if it prospered must prosper in this one way.

It was some years before another such community based upon this single manufacturing idea was established, and, long before this the wisdom of the founders of Lowell was

amply justified by their works. The genesis of the idea goes back to the genius of a single man, who died before his idea had been thoroughly developed but who left his impress upon other men to such a degree that much that follows may be directly traced to him.

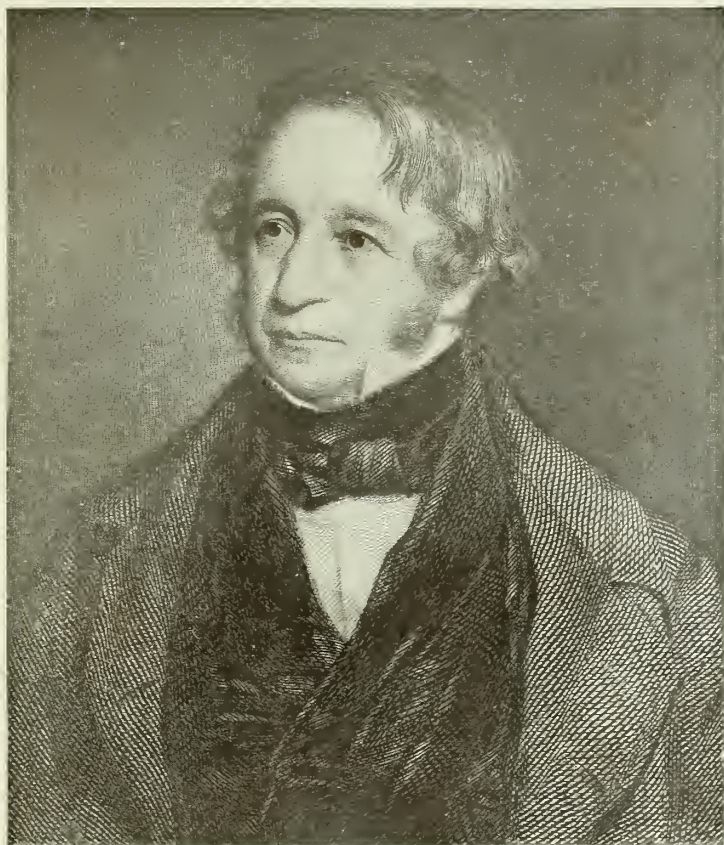
So loyal to him were his associates that in due time his memory was perpetuated in the name of the community which he never saw and about which he personally only vaguely dreamed.

The first cotton mill in this section was built in 1813 by Captain Phineas Whiting and Colonel Josiah Fletcher, who erected a large wooden building on the Concord River. Little is known about the history of the mill, except that in five years it was turned into a woolen mill.

In 1821, as a result of Worthen's suggestion, the stock of the Pawtucket Canal Company was bought by Jackson and Appleton, as well as the farms which were adjacent to the canal, 400 acres in all at an average price of \$100 an acre. At this time there were less than a dozen houses there with about two hundred inhabitants in all.

Articles of Association, as the form of the new company was termed, were drawn up December 1, 1821, and in February of the following year an act of incorporation was granted to the Merrimack Manufacturing Company, which began at once active preparations to erect a factory on the new site. The directors of the company were Kirk Boott, who was also Treasurer and Clerk, and, later, the Agent of the mill, Patrick Tracy Jackson, Nathan and William Appleton, Warren Dutton, Israel Thorndike, Jr., and John W. Boott. An assessment of \$500 a share was made, to be called for by the Directors.

Having secured what they deemed sufficient water power to supply not only the mill they intended to build at once, but enough to furnish power for many more, the first step of the new company was to make future plans possible by the enlargement of the canal and the renewal of the locks.



yours truly
R. H. Johnson

To this end, the canal was widened and deepened at a cost of about \$120,000, while from it a lateral canal was dug to join the Concord River.

The site for the first mill was chosen with a view to making full use of the thirty-foot drop of the river at Pawtucket Falls. Building was begun in 1822, and by September first of the next year the first wheel turned, with the first return of cloth in November.

The first cotton cloth made by the Merrimack Manufacturing Company was coarse in texture but thick and firm, something like thin sail-cloth and sold at 37½¢ a yard.

The promise made to Ezra Worthen when he suggested that the Waltham Company should locate at this place and that he should be given charge of the new mill was kept, and he was appointed superintendent. He lived only a year after the plant was put in operation. At the same time that the mill was being erected, tenements and boarding houses for the overseers and operatives were built. Thus, although Lowell had passed away a few years previously, the great plan formulated by him for the protection and comfort of his employes, which had proved to be so successful in the Waltham Mill, was actually introduced into the new enterprise. Here, again, were established neat, well-kept boarding-houses with pleasant homelike customs and restrictions; the church, library and the lecture-room followed. In the words of the Honorable Frederic Greenhalge who eulogized Lowell fifty years after the founding of the city which justly bore his name, "Religion, culture and refinement lent their sweet influences to the life of toil. Not this alone," continued the orator, "but a new doctrine was proclaimed,—that the welfare of the employed was a necessary factor to the success of the employer. They were one in interest, one in the loss and one in the gain; one in prosperity and one in adversity. Milton tells of a music so divine that it would create a soul under the ribs of death. Francis Cabot Lowell discovered

and applied a principle that created a soul under ribs of industrial economy."

Lowell's brother-in-law, Patrick Tracy Jackson, his old-time friend, Nathan Appleton, and an energetic young Englishman named Kirk Boott, were the three men to whom it fell to carry out the broad ideas of Lowell along social and industrial lines. That they did their work so most faithfully and efficiently is a matter of record.

The Merrimack Manufacturing Company prospered from the beginning. Operations were barely begun when the directors were authorized to petition for an increase of capital to \$1,200,000. A new subscription of 600 shares was voted and a committee appointed to form a company which became the owner of all the land and water power in Lowell. This action was deemed necessary, inasmuch as there were mill privileges enough for several independent factories. It seemed expedient therefore that one company should have charge of the disposal and sale of the land and water power, and of the furnishing of machinery, without entering itself into the manufacture of cotton. The old charter of 1792 permitted this and under the Act the Locks and Canals Company effected a reorganization, increasing shares to 1,200 at \$500 a share, and taking over the whole property of the Merrimack Manufacturing Company. It then sold to this company the land and water power it now possesses. This arrangement made it possible for a similar action on the part of as many companies as the Locks and Canals Company could supply with land and water power.

The Locks and Canals Company also built and rebuilt mills, and supplied the machinery for them. In time, this company alone employed from 1,000 to 1,200 hands.

Within four years after construction of the first mill was begun, or in 1826, the population had increased from the original two hundred farmers and their families who resided in the vicinity when it was first visited by Appleton

and Jackson, to about 2,500 persons. Of this number, it is interesting to note that only twelve were tax-payers, each one being assessed for about twenty dollars. It was in this year, also, that the part of Chelmsford surrounding the falls and which was largely controlled by the Locks and Canals Company, was incorporated as a separate town and named "Lowell."

It is related that when the act of incorporation was before the Legislature, two names were suggested for the new town,—Lowell, after the man who originated the cotton mill as it exists today, and Derby, for the town in England, of that name in which were located the greatest hosiery mills in the world. When the matter was mentioned to Nathan Appleton, a life-long friend and admirer of Lowell, he emphatically said that by all means it should be called "Lowell," thereby embodying the thought that was later expressed by one who spoke in praise of the far-seeing merchant and benefactor, that although "His foot never trod the streets of Lowell, yet the men whose hearts caught fire from his thought decided that the Manchester of America should be his monument."

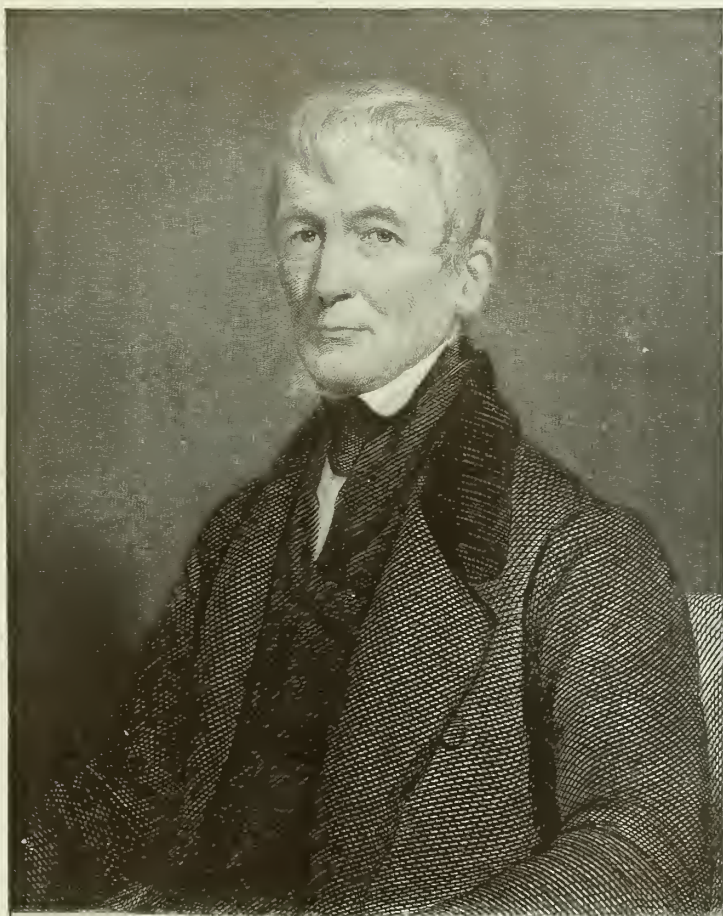
Chelmsford, and the country round about, was isolated from its business center, Boston. In 1793 the Middlesex Canal, so-called, was begun connecting the Merrimack River at Chelmsford, above Pawtucket Falls, with Boston Harbor. This canal was completed in 1804 and was used for freight and passengers until some years after the completion of the railroad in 1835.

Lowell, the new town was also connected with the outer world by stage coach, which remained the only means of travel by land until the coming of the railroad, thirteen years later.

As early as 1830, Patrick Tracy Jackson was planning for a railroad to connect Lowell with Boston. His original idea was to have the cars drawn by horses but he had been keeping watch on the experiments of George Stephenson in

England and no sooner had a steam engine been successfully run on the railroad from Manchester to Liverpool than Jackson began to correspond with inventors and mechanics in that country with a view to using the new steam cars on the railroad which he hoped to build. The project of a railroad with cars thus propelled by steam was pronounced radical, wild and visionary, but Jackson went ahead, secured a charter and began to build the road. At first, he estimated that the cost might be in the neighborhood of \$100,000, but, when finished, in 1835, it had cost \$1,800,000.

The first railroad engine was shipped from England to Boston, where it was taken apart and sent to Lowell by way of the Middlesex Canal. In Lowell, it was set up again and made its first run from that place to Boston. According to those who relate the story, this procedure was followed because Jackson, the prime instigator of the venture, was in Lowell and desired to have a ride on the initial trip, but the circumstance does not seem in keeping with Jackson's reputation for efficiency. A more probable reason for the act was that he desired that whatever glory might follow the running of the first train in all America, should be given to the city which was then in its infancy but in the future of which he had such an intense faith.



P. J. Jackson

CHAPTER VII

CHARACTER OF THE OPERATIVES

For several years after the first mill was built the town grew at a rapid pace. Laborers were brought from Boston and other places to build new mills and they in turn had to have houses built for them, so that, in the language of a later day, Lowell "boomed" from the start. In 1824, the Merrimack Company erected the first schoolhouse for the children of those employed in the mills, while the following year the first church was built, the Reverend Theodore Edson, who for many years thereafter labored among the people and was much beloved, being the first rector. Up to this time no public worship had been held in the vicinity since the days when John Eliot preached to the Indians. Other churches followed, but this first one was unique in that it was the only one to be built by a corporation and practically maintained by it. For a time, each operative paid 37½ cents each month to its support, but for several years after this practice was discontinued the corporation regularly bore the expense of its upkeep.

In thus early establishing the most important elements of society, the home, the church and the school, it is evident that, although the construction of the mills was the main issue, the founders of Lowell decided that in its infancy the system should be perpetuated which had been applied with marked success in Waltham and which was based on the new idea that corporations should exercise a paternal influence over the lives of their operatives. To this system, called in the economic world "The Lowell Factory System," belongs much of the credit for the acknowledged superiority of the early operatives.

One of the characteristics of the system was that each corporation formed a community in itself, the population of which might be roughly divided into six classes as follows:

First, the Treasurer, who was the most important man in the mill management. His duties carried him far afield. He studied the markets, bought the raw cotton, sold the finished product, and determined financial and production policies.

The Agent's office was sometimes combined with that of the Treasurer. Kirk Boott thus acted as Treasurer and Agent for the Merrimack Mills from 1822-1837. Cowley, in his "History of Lowell," says of him, "He became, by the general consent of all, the man of the place, so that for fifteen years the history of Lowell was little more than the biography of Kirk Boott."

Second, the Agent, who was the Treasurer's manager on the production side. He usually lived somewhat apart from the mills in a residence conspicuous for its dignified appearance. In a quaint little book called, "Loom and Spindle," the author says, "The Agents of the corporations were the aristocrats of the local mill organizations."

Third, the Superintendent, who was chosen largely for his practical experience in the actual workings of the mill and for his ability to deal with the mill people.

Fourth, the overseers, who were generally ambitious workers who had come up through the mill. They usually lived in the end tenements of the blocks in which the operatives boarded and supervised the conduct of these houses.

Fifth, the operatives, who were, of course, the great majority of the population of the community and who were commonly spoken of as "girls," and "men." They lived in the corporation boarding houses.

Sixth, the laborers, whom Cowley calls, "The lords of the spade and shovel." This last class was largely composed of the so-called foreigners which at that time consisted principally of a few Scotch and English and a considerable number of Irish. These last segregated themselves in a locality of their own and often occupied houses of their own construction. The early histories contain

many instances of the belligerency and inability of these people to mix with their fellow workers.

At the time the Lowell cotton mills were started, the era of mechanical industry for women was just beginning in this country. Woman, as yet, had not been considered seriously as a money-earning member of the community, and, in consequence, her labor commanded a small return. A contemporary of the time later stated that when she entered the mills as a young girl there were only seven occupations outside the home open to her, none of which afforded more than a bare living, namely, teaching, needlework, keeping boarders, factory labor, type setting, and folding and stitching in book binderies. Of these, the factory labor was the least desirable, partly because of the poor wage and also because a factory girl was regarded as the lowest among women, the result of influences she was subjected to in England and France. To destroy this prejudice was one of the reasons for the proportionately high wage offered when the Waltham System was first instituted, and that it was successfully overcome is evidenced in the fact that the mill operatives in Lowell were for many years far above the manufacturing population of any country,— “a reading, thinking, honest, economical and independent class,” to use the words of Cowley in his “History of Lowell.”

Within a short time after the first mill began to operate the news of opportunities to be found in the mill town had spread about the country-side. As a matter of fact, one of the first moves of the company after incorporation was to send agents throughout New England to engage workers, with the result that finally they literally poured in to the town and the Lowell mills were filled with blooming and energetic women, naturally intelligent, quick witted, and adaptable. Many, coming as they did from the far outlying districts, were spoken of in records of that time as being “most odd in appearance, with peculiar dialects,

garbed usually in homespun dresses and with a shawl for a head covering." These oddities rapidly disappeared, however, after association with their more sophisticated companions.

At times, the girls would return to their homes, for a holiday, or for other reasons, and their accounts of the congenial life in the mill town induced others to come, particularly those who desired the literary or social advantages as well as work. They were told of the lyceum lectures, such as were provided by the Lowell Institute, the Mechanics Association, and other organizations of equally high repute; they learned that there were circulating libraries which offered unlimited opportunities in the way of reading and study; they heard of clubs and societies whose activities opened up many avenues for advancement and companionship,—these were irresistible attractions to the ambitious and lonely country girls. There is little wonder that, under these circumstances, they soon developed a community life unique in the history of America.

The culture and society provided thus assisted in obtaining the desired workers, but the relatively high wage it was possible to earn of course entered largely into the question. Numbers of dependent women, unmarried or widowed, who had never been self-sustaining, were given the opportunity of escaping the position of being a "poor relation" and they regarded it as little less than heaven-sent. Up to this time, a lack of profitable employment for women made it necessary that they be maintained by the men of the family, but the young men of New England were going west and to the women remaining at home the opening of factories was a welcome event, affording as it did a means of honorable livelihood. With a great many women, gentility had prevented them from entering the few other vocations open to them at that time, but in the mill a comfortable home life was assured them and the considerate treatment by employers preserved their feeling of respectful equality.

They were not driven in any sense, and, as quaintly phrased by one who had spent her girlhood in the mills, "it was a knowledge of antecedents that safeguarded liberties."

It is almost unnecessary to state that with this heritage of gentle birth, the qualities of frugality and thrift, industry and economy were included. It was the common custom on the first day of the month, after paying the board bill of \$1.25 a week, for the girls to put the balance of their wages in the savings bank, where it was allowed to accumulate until enough for some desired object had been obtained. In 1840, 978 factory girls were depositors in the Lowell Institution for Savings, with deposits averaging \$100 each. A few years later, it was estimated that two-thirds of the deposits in savings banks in Lowell were made by mill operatives.

The process of entering the mill amounted almost to a ceremony. In addition to a careful gathering of vital statistics, each one was obliged to sign a "Regulation Paper," which demanded, among other things, "regular attendance at some place of worship." Strict morality was, of course, a stern requirement; the slightest infringement brought instant dismissal, more to be dreaded than punishment, as the fact that one had been discharged made it practically impossible to secure employment in another mill.

With all these qualities — refinement, superior mental ability, industry — the girls possessed the inestimable benefit of good health. There is no evidence that, coming from the country to take up the unaccustomed duties of an indoor life, work in the mills was ever considered to be inimical to their health. This may have been due, in part at least to the fact that they brought with them an inheritance of sound bodies and endurance, together with the regular and simple habits of their previous country life. The plain and substantial food provided for them, also contributed in large measure to the maintenance of the rugged health for which they were noted.

It is very difficult to obtain mortality statistics which would include this particular group of workers, as in that early day such records were not kept. In his history of Lowell, however, Cowley states that in 1828 the town contained about fifteen hundred mill operatives, and that there had not been a single death among them during the year.

In 1834, M. Chevalier, French Political Economist, sent to this country by M. Thiers, Minister of the Interior to Louis Philippe, to inspect the public works of America, visited Lowell. He was so pleased with the factories and factory girls that thirty years later, in 1866, when he was a member of the Committee charged with the organization of the Exposition of 1867, he wrote to Senator Sumner asking his aid in having a group of these girls sent to Paris with their looms, so that they might be seen at work in Paris.

M. Chevalier also gives the Merrimack wage scale as of May, 1834:

Picking and Carding	{ 3.00 Dollars per week
	{ 3.10
	{ 2.78
Spinning	3.00
Weaving	{ 3.10
	{ 3.12
Warping and Sizing	{ 3.45
	{ 4.00
Cloth Room	3.12

The history of Lowell in no sense can be considered as identical with that of other manufacturing places in New England, because here, for the first time in the history of America, if not in the world, were gathered together a large number of factory people who were actively interested in their own mental cultivation. Emerson once said that the children of New England between 1820 and 1840 were "born with knives in their brains," and certainly girls with enough ability to conduct a magazine (The Lowell Offer-

ing) which attained a world-wide popularity, could not be regarded as other than keen and mentally alert. There is an instance of one of the managers having made an examination of the girls in his mill, and out of 800 there were only 43 who could not write their names legibly. Of these, he further stated, 42 were not native Americans. Night schools started almost as soon as the mills were opened and they were always well filled. Some of them were devoted to studies of a special nature.

The girls were exceptional in their desire to attain mental improvement. They were omniverous readers. At the boarding houses they subscribed for newspapers and other periodicals, which were carefully read and later discussed. All the topics of the day,— the Mexican War, extension of slave property, French communism, these and others were debated in the forum of the boarding house sitting-room or in the rest intervals of their work. Nearby, the Brook Farm Community had been established and its progress was watched with much curiosity. Many books also were read and debated. It is recorded that when they were not permitted to take any reading matter into the mill, the girls took clippings, copies of poems, etc., and pasted them on the windows for perusal in their spare moments.

The Lecture Courses were a great attraction to the operatives, with lectures such as Ralph Waldo Emerson, Wendell Phillips, George William Curtis, John B. Gough, Artemas Ward, J. G. Holland, William Lloyd Garrison, and others equally noted at that time.

Professor Peabody of Harvard University, who used to lecture every winter for the Lowell Lyceum, in an article written for the Atlantic Monthly, said that at his lectures the hall was always crowded and that four-fifths of the audience were factory girls. When he entered, almost every girl was intently reading, but when he rose to begin the lecture, the book was laid aside and paper and pencil taken instead. "There were very few who did not

carry home full notes of what they had heard," he wrote, adding, "I have never seen anywhere so assiduous note-taking,—no, not even in a college class, as in that assembly of young women, laboring for their subsistence."

The impression left with others, both lecturers and visitors, was equally favorable. Harriet Martineau, in a letter to a contemporary, stated that she accompanied Emerson once to a lecture given by him to the factory people in a winter course on historical biography. The fact that the audience, composed of girls who worked 70 hours a week, showed no sign of weariness but was on the contrary wakeful and interested, was a matter of deep interest to her. "Minds kept fresh, strong and free by knowledge and power of thought accounted for the fact that they were not worn and depressed under labors."

Dickens in his "American Notes" published after a tour of the United States in the early forties, writes at some length of a visit made to Lowell and its cotton mills. He was particularly struck by the well-dressed, clean and healthy appearance of the girls, who had "the manners of young women, not of degraded brutes of burden," and went on to state other facts, three of which "will startle a large class of readers on this side of the Atlantic." The first was that there were pianos in many of the boarding houses. Second, nearly all the operatives were subscribers to circulating libraries, and, third, a periodical was being edited, the original articles for which were written exclusively by girls actively employed in the mills.

Other visitors to Lowell recorded their impressions—among them, Anthony Trollope, who afterward said that the girls were infinitely superior to those employed in the cotton mills in England; David Crockett, who stated, in his characteristic manner, that "he wanted to see how it was that these Northerners could buy our cotton, and carry it home, manufacture it, bring it back and sell it for half nothing, and in the meantime live well and make money be-

side.” Going among the factories as the dinner bells were ringing and “folks pouring out of doors like bees out of a gum,” he noted that the girls were all well-dressed and lively, looking as if they were coming from “a quilting frolic.”

General Jackson visited Lowell in 1833, and as part of the program in his honor, a procession was arranged in which the mills’ girls had a prominent place. About 2,500 paraded, dressed in white and carrying white parasols. The sight of this “two miles of girls” made a great impression on Jackson. It is also related that the announcement that the girls were to march had the effect of attracting about as many people as did Jackson himself.

CHAPTER VIII

DESCRIPTION OF A LOWELL CORPORATION AT THIS PERIOD

A characteristic of the Lowell Factory System was the design for the control of the boarding houses and their inmates, as instituted in the Waltham Manufacturing Company by Francis Cabot Lowell. These boarding houses were long blocks of brick buildings, situated on the banks of the river, or of the canal, a few rods from the mills at right angles to them, and containing a sufficient number of tenements, as they were called, to accommodate the operatives employed by the corporation. Between the boarding houses and the mill there was generally a long, one-story brick building containing the Counting Room, Superintendent's and Clerk's rooms and store rooms. The enclosure which this arrangement of structures formed and upon which all of the buildings opened was called the mill yard. The only access to this yard was through the counting room and in full view of those whose business it was to see that only those who belonged there came upon the premises. Furthermore, the location of the Superintendent's room gave him an unobstructed view. On one side were the boarding houses, occupied only by known and approved tenants; on the other side were the mills, in each room of which there was a carefully selected overseer who was held responsible for the work, good order and proper management of his room. In many cases, the agents and overseers were members and sometimes deacons of the church, or, as frequently happened, Sunday School teachers of the girls employed under them. The interest in their welfare which this association, apart from the mill, provided was of inestimable benefit, and, from a utilitarian point of view, it must have caused the girls to feel a greater interest in their work.

Each of the long blocks of boarding houses was divided into six or eight tenements, usually two and one-half stories high. All were furnished with water, yards and outbuildings, and were kept clean and well painted. Each spring the buildings were whitewashed and repaired at the expense of the corporation.

The housekeeper was generally a middle-aged woman, often a widow, who was selected with the utmost care. A parlor for the housekeeper was provided, as well as a sitting room for the boarders. The rest of the house was divided into sleeping rooms, in each of which were lodged two, four, or six persons.

Separate houses were maintained for male and female operatives. In the case of men residence in a corporation house was optional. Every woman, however, when securing employment was required to sign the so-called "Regulation Paper," which stipulated that she should live in a company boarding house.

The doors of these boarding houses were closed at ten o'clock in the evening, all occupants having to be in-doors by that time unless special permission for a later hour had been obtained.

Board was obtained at a very nominal rate,—\$1.25 per week for women and \$1.75 for men. Earnings at this time amounted to between \$3.00 and \$4.00 a week. Operatives entering the mill at once received pay, usually 55c per week besides board. In a few months they would receive from \$1.00 to \$1.50. The average pay at this time was \$1.93 per week which with board at \$1.25 amounted to \$3.18. Some, however, earned \$3.00 to \$4.00 above this amount. The method of payment in use required that the amount for board should be deducted from the pay envelope on pay day which occurred once a month.

Hours of labor averaged $12\frac{1}{4}$ a day, or $73\frac{1}{2}$ a week of six days. As a rule, however, the actual hours were about $10\frac{1}{2}$ a day, or 63 a week, as tending the machinery allowed

some moments each hour for relaxation. Four holidays were granted during the year,—Fast Day, Fourth of July, Thanksgiving and Christmas.

Lamps were never lighted in the boarding houses on Saturday evening, as the operatives were supposed to retire early in preparation for the Sabbath.

There was no intention on the part of the corporation to secure profit from the houses, and in consequence the rents were very low, being about one-half to one-third of what similar houses rented for elsewhere in the city. When not fully occupied, or in other times of pressure, a part and even the whole of the rent has been known to be remitted. At such times they became a source of expense to the corporation, but, on the whole, the advantages of supervision and the wholesome effect upon the operatives was felt to be more than an equivalent for this loss. Indeed, the influence which this system of boarding houses exerted upon the good order and morals of the inhabitants, was, by all accounts, very great. It enabled the superintendent to extend his care and influence over the operatives not only while they were in the mill but while they were away from it. And, furthermore, the comfortable environment offered, combined with the inducement of a good wage, attracted a very desirable class of operatives who eventually did much to bring success to the industry.

At the time that these boarding houses were in successful operation Dr. Elisha Bartlett, the first mayor of Lowell, as well as a practising physician in that town for many years commented as follows:—

“The general and comparative good health of the girls employed in the mills here, and their freedom from serious disease, have long been subjects of common remark among our most intelligent and experienced physicians. The manufacturing population of this city is the healthiest portion of the population. . . . They are but little exposed to many of the

strongest and most prolific causes of disease, and very many of the circumstances which surround them are of the most favorable character. They are regular in their habits. They are early up and early to bed. Their fare is plain, substantial and good, and their labor is sufficiently active and light to avoid the two evils that arise from indolence and over-exertion. They are but little exposed to the sudden vicissitudes of the seasons and they are very generally free from anxious and depressing cares."

In 1857, Senator Thomas H. Benton visited the mills at Lowell, spending the best part of a day in them. The same evening he made an address in the town, and, in speaking of the corporation boarding houses, said, that he had found the operatives as comfortably and handsomely situated as members of Congress in Washington. "They live in large, stately, elegant houses," he said. "You are shown into a parlor with the same kind of furniture as found in a Congressmen's boarding house in Washington, and the tables are covered with better and more books than usually found in the Congressmen's parlor." With due allowance for platform ardor, this might be considered as a splendid testimonial to the high character of the boarding houses, particularly when it is remembered that he was speaking in the place where they were located and to an audience largely composed, no doubt, of those who occupied them.

Each of the boarding houses was considered to be a community in itself, a place where numbers of young women, coming from all parts of New England, met, and lived together. In their hours of relaxation all the duties commonly performed in the home were carried on,—letter writing, studies, reading and sewing. Meeting as they did in a common sitting room, there was much discussion on religious and social subjects, as well as on more trivial matters.

There remains a clear record that the opportunities for

helpful advice and for cooperation in work and play, instilled in these young women by this community life, were of untold benefit. In later years, several of them became well known in literary and other walks of public life. Lucy Larcom, the poet, and her sister Emmeline, who also became a writer, began to work in the mills at a very early age, their mother, who had been left a widow, having become the mistress of one of the boarding houses in order that she might be able to keep her family together. Harriet H. Robinson, a pioneer of Women's Suffrage and one of the founders of the General Federation of Women's Clubs, wrote of her experiences as a mill girl; Margaret Foley, a sculptor and cameo cutter, famed for the portraits of Sumner, Longfellow and Bryant which she later made; Harriet Curtis, a writer and Eliza Jane Cate, also never failed to refer with a measure of pride to their early years in the mills.

CHAPTER IX

THE LOWELL OFFERING

Mention has been made in the foregoing pages of a magazine published by the mill operatives which created a great deal of comment in the literary world of that time. This periodical was "The Lowell Offering," which attained distinction not only for its worth and because it was the first work written by factory girls, but also because it was the first magazine in the world to be written exclusively by women.

According to an editorial in a Lowell newspaper in 1842, the origin of the Offering was as follows:—Some time previously the pastor of the Second Universalist Church established an Improvement Circle, composed of the girls in the various mills, which was evidently for social and other purposes. At the meetings, original articles were read, and, to overcome the diffidence naturally expected which might hinder some from making contribution to the weekly programs, a box was provided in which articles, signed only with initials, were placed. The result was such a variety of material of so interesting a nature, that a "little book," was compiled which later developed into a periodical, edited and issued solely by the girls. The first number was issued in 1840; the last in 1849, (seven volumes in all) when the paper was discontinued from lack of financial support.

The first secretary of the Improvement Circle was Emeline Larcom, while her sister, Lucy, was the most famous of the group of New England writers who began their work by contributing to the Offering.

Instantly, this unique publication was welcomed as a pleasant surprise, and subscriptions came in from all over the country.

An endorsement of this magazine, written by the editor of the North American Review, John G. Palfrey, was as follows:—

“Many of the articles are such as to satisfy the reader at once, that if he has only taken up the Offering as a phenomenon, and not as what may bear criticism and reward perusal, he has but to own his error, and dismiss his condescension as soon as may be.”

Charles Dickens in his “American Notes” says —

“I brought away from Lowell 400 solid pages (Offering) which I have read from beginning to end. Of the merits of the Lowell Offering, as a literary production, I will only observe — putting out of sight the fact of the articles having been written by these girls after the arduous hours of the day — that it will compare advantageously with a great many English annuals.”

Professor Felton, of Harvard University, while in Paris attending a course of lectures on English Literature by Philarte Chastles, heard an entire lecture on the history and literary merits of the Offering, while in 1834, the Minister of the Interior in France showed a bound volume of this same publication to the French Chamber of Deputies as an example of what working women may do for themselves in a Republic.

In England, some of the articles from “The Offering” were collected and issued in book form, entitled, “Mind Amongst the Spindles, a Selection from the Lowell Offering.” While in this country on a visit, the editor of the book was given a number of copies of The Offering, about eight hundred pages in all, the reading of which he freely stated he viewed with distaste. He confessed, however, that he did not lay them aside until they were wholly read, and when he did so it was with the conviction that they contained real merit, and were worthy of wider circulation. In preparing them for publication, he wrote an introduction, in which he outlined the qualities which struck him most, as follows:—

First, “Entire absence of pretension in writers to be what

they were not. Girls they called themselves, not ladies. No affectations of gentility, consequently they were free from vulgarity. 'They feel and proclaim . . . think it an honor to labor with their hands.' "

Second, "The papers showed the influences under which they had been brought up. Piety, thoughts of home, mother's love, father's labor, all constantly described."

Third, Patriotism in their tone.

Fourth, Like all writers of good natural taste not perverted into imitators, they perceived the interest in describing what they had witnessed.

Fifth, Although some things were "tedious, sentimental and labored," the editor felt that it would have been difficult for a large body of contributors to produce so much matter with so little of bad taste. They were familiar with good composition and knew somewhat of ancient and modern history.

CHAPTER X

ABANDONMENT OF THE CORPORATION BOARDING HOUSES

The corporation boarding houses as briefly described in the foregoing pages endured from 1822 when the Merri-mack Manufacturing Company was founded, up to the early nineties, a matter of nearly seventy years. During all this time, the corporations had particularly interested themselves in providing homes for employes where the expense of board and lodging would be less than prevailing rates in privately owned houses. The first outward indication of a breakdown of the system came when an association of boarding house keepers, finding it difficult, with the rising cost of living, to maintain the low prices hitherto prevailing, met to consider an advance to an equality with the other boarding houses in the city. But, for some time before this step was taken, premonitory signs of the decline were seen in the gradual change in the character of the operatives. This change began about 1882 when the native New Englanders, together with increasing numbers of French Canadians, Irish and English, many of them now naturalized, began to be displaced by foreigners. It will be remembered that the sleeping rooms of the boarding houses accommodated from two to six persons, and if all were of the same social habits, this arrangement was doubtless very pleasant. Different nationalities, however, with their varying standards could not associate harmoniously in such a restricted area and so more and more the operatives, particularly those of foreign birth, tended to find their living quarters outside the corporation houses, preferably in districts almost wholly settled by those of their own race. Furthermore, the American girls had always subjected themselves to the discipline required, and the fact that the newcomers were of a type to resent rules, especially the one which required them to take all of their meals in the house,

made them undesirable as boarders. The system of deducting board money from the monthly wage also did not please them, as they greatly preferred "to have all their money in their pay envelopes."

In view of the dislike which the operatives, generally, now felt toward the "Lowell system," the corporations agreed that the houses had outlived their usefulness and opportunities to sell them were welcomed. A former agent of the Massachusetts Cotton Mills, William S. Southworth, explained the situation in a very few words, by saying, "When a corporation could no longer see any advantage to itself in furnishing houses, when its best men refused to live near the mills, and the most desirable of the ordinary workers preferred to live elsewhere than in the tenements and boarding houses offered them, the whole system was ready for abandonment."

When English-speaking operatives moved out of the corporation boarding houses and tenements to suburbs, and outlying districts, these boarding houses were sold to private owners. The result was a great increase in rents, as well as in the price of board and lodging, and several families crowded into houses or apartments formerly occupied by only one family.

Emphasis must be laid on the fact that primarily the reason for these changes of living was a change in economic conditions. As earlier stated, this system afforded no profit to the mills, and, indeed, added considerably to the overhead expenses. It was entered into solely as an expression of a philanthropic purpose, and it was discontinued because the operatives, and not the mills, so desired.

A similar situation obtains in the south today, and, although I am not a prophet nor the son of a prophet, I venture to say that in the course of time the "Lowell system" now practically adopted by the Southern Mills will pass through a similar experience and the day will come when the southern operatives will also demand "all our money in the pay envelopes."

CHAPTER XI

CHANGE IN CHARACTER OF THE OPERATIVES

While the official history of immigration to this country begins in 1820, or shortly before the first mill was started in Lowell, it was not until some years later, or about 1827, following a commercial depression in England, that foreigners began to displace to any extent the native New Englanders in the mills. By 1847, thirty times as many came as in 1820. Undoubtedly the influx of different peoples, succeeding the era when only native help was employed, brought about the breaking up of the boarding houses, as has been pointed out, and the gradual decline of the community life heretofore existent. Historians of Lowell and other mill towns in New England agree in the opinion that the period when the employes were of one race was far better than later when immigration had destroyed the homogeneousness of the population.

Cowley, in his History of Lowell, states that up to 1856, no permanent operative population existed in Lowell. "While operatives are born and bred in rural homes, work a few years in the mills, and then return to agricultural pursuits, the interests of Lowell remain secure," adding that this fact alone had saved the city from the evils of vice and ignorance, demoralization and misery, which predominated in manufacturing cities of Europe.

The first immigrants were all from Western Europe; those from Eastern Europe did not begin to come until 1855; in another decade the composition of the mill population began to show a material change from Western to Eastern Europeans.

Practically no Irish were in Lowell before 1822, when about thirty walked from Charlestown in search of work. They were met by Kirk Boott and set to work on the new canal then being built. Others followed and became operatives and laborers in the mills. Coburn says that "they

brought in a racial stock from which some of the best men and women of the present generation in Lowell are descended."

It was not until 1852, when the cotton industry was recovering from a year or two of depression, that the Irish began to arrive to any extent from their native land. Hard times in Ireland, beginning about 1846 and culminating in the famine of 1854, resulted in their coming in numbers, nearly one-half of the total immigration during the period being Irish. At the same time, with many spindles idle in the cotton mills of New England, the native women operatives returned to their country homes by thousands. Many of them never came back to the mills. Their places were filled with the Irish immigrants. Then, "the mills are filled up with Irish help," was the complaint. With the Irish, the corporations were able to continue wages at the low point established during the period of overproduction, while, in them, they also secured a more subservient force of operatives and one better fitted physically to endure the strain of the work.

As the Irish displaced the native Americans, they in turn were later displaced by another group, the French Canadians, who began to come about 1865. At one time it seemed likely that they would replace all other operatives in the textile mills of New England. Yet, in time, they tended more and more to return to their homes in Canada, having saved enough money to buy farms and live in comparative affluence. With the coming of the peoples from Eastern Europe the emigration from Canada slackened.

Relatively few English ever came to Lowell. Those who did arrive were a satisfactory and high-grade class of operatives. When the Merrimack Company was established, an attempt was made to manufacture calico. It was found impossible, however, to get satisfactory results in dyeing and printing, and, as this art was practised extensively in England, it was decided to send to that country and secure

experienced workers. An agreement was made with them and they came to Lowell and lodged in a long, low block of houses of the Merrimack Corporation called the English Row. It is related that when they arrived they were not satisfied with the wages, which they claimed were not according to agreement, and they refused to go to work. They finally left the town for Boston in a large wagon with a band of music. The agent of the mill went after them and made terms and they returned, establishing in Lowell the art of calico printing as it exists in the mills. John D. Prince was the first superintendent of printing. Most of the English immigrants went to southern New England textile centers where better opportunities were given them in the fine goods mills.

In a study of the Greeks in the United States, it is stated that the Greek colony of Lowell is probably the most exclusive and distinctive Greek settlement, of any considerable size, in the United States. In 1912, there were more Greeks at work in the factories of Lowell than in any other city in the country. The first arrivals of this people were unwelcome as their habits and customs were wholly unfamiliar to their fellow-workers. Their standard of living also was lower than anything hitherto existent among the mill population. As operatives, they were confined largely to two mills, the Lawrence and Tremont and Suffolk Corporations. This was due to the fact that the first Greeks were employed there and those who followed naturally applied at the places where they had friends. Coburn says that at night when the operatives poured out of the mills, "the poor scared Greeks would gather twenty or so together, take the middle of the street, and in close formation rush to their lodgings, not daring to stir abroad until morning." In time, however, they learned to adapt themselves. They were slow to fraternize with the other people and segregated themselves in a region close to the mills.

About 1890, Jewish immigrants appeared in Lowell.

For a year or so previous, mill officials had been in receipt of letters from foreign agencies in regard to work for Russian Jews driven from home by persecution. The few who were already in the mills were regarded with antagonism, but, despite active opposition, many Jews sought employment here.

Western Asia later furnished a considerable number of peoples from Armenia and Syria, while later still the peoples of Poland came in considerable numbers.

POPULATION OF LOWELL IN 1920

Native white of native parentage	24,676
Native white of foreign or mixed parentage	49,793
Foreign born white — English	3,614
Irish	7,453
French (and other) Canadian	13,782
Scandinavian	629
Portugese (Includes Atlantic Indians)	2,068
Greeks	3,733
Poland	2,298
All others	4,713
Total population	112,759

Nationality Distribution in a Representative Cotton Mill in Lowell

Nationality	Years				
	1901	1914	1917	1920	1922
American per cent	10.94	21.17	25.64	37.68	38.37
English “ “	2.85	5.53	4.77	3.89	4.11
French “ “	19.92	10.49	12.20	12.11	12.51
German “ “	.55	.31	.29	.08	.11
Greek “ “	7.53	10.08	10.77	5.50	4.89
Irish “ “	45.57	13.06	11.15	9.28	9.00
Polish “ “	9.15	25.16	22.16	17.30	18.25
Portuguese “ “	1.96	5.26	6.48	6.92	7.62
Russian “ “	1.24	1.26	1.08
All other “ “	1.53	8.94	5.30	5.98	4.06

Other peoples represented — Italian, Jewish, Armenian, Spanish, Egyptian, Belgian, Bulgarian, Arabian, Lithuanian, Hungarian and Finnish.

Many of the “Americans” in the above tabulation were foreign-born.

This mill makes a feature of Americanization and naturalization classes.

CHAPTER XII

WELFARE WORK

The Bureau of Labor defines welfare as "Anything for the comfort and improvement, intellectual or social, of the employes, over and above wages paid, which is not a necessity of the industry nor required by law."

Welfare work as it is conducted in the United States today had its beginning in the cotton mills of Lowell, when the corporations supervised the living conditions of the operatives and supplied them with homes beyond the standards of the time, in order that they might attract a desirable class of labor. This endeavor to put into practice a system of industrial betterment, at that time unique, was generally carried out in other mill towns in New England until the incoming of foreigners. On account of their difference from the native New Englanders, in religion, customs, etc., these aliens chose to live in communities of their own. Their standards were lower. They were paid higher wages and the corporations exercised no supervision over their lives. Thus, for a time, practically nothing was done for the improvement of the employes. There was no welfare work, so to speak. During the past few years, however, a new movement has begun with the particular design of improving social and working conditions and an effort has been made to collect information regarding specific measures and their results.

The Bureau of Labor made one such study in 1917, including in the number of those visited about sixty textile plants, all of which conducted welfare work of one sort or another. Of these sixty mills, twenty-one reported definitely that an improvement upon the time lost and in the stability of the force had been noted. These reports, of course, were more or less in the nature of opinions. It has been proved, however, that a considerable addition to the cost

of production is made by absenteeism and labor turnover, and if these can be reduced, by scientific management or by the introduction of welfare features, or both, just to that extent can the value of so-called welfare work be measured.

A summary of the experience of leading American establishments with rest periods, was given in a report prepared by the National Industrial Conference Board, in 1919. The data was assembled with a view to giving some idea as to the extent to which recesses in the day's work have been practised in this country, as well as to determine, in a sense, how far such pauses are desirable from the standpoint of health and of production.

The Board points out that the records of time study experts and the observations of experienced employers reporting for the investigation tend to show that rest periods have frequently contributed to increased production. The prevailing practice in planning rest periods among the establishments cited was to provide one in the forenoon and one in the afternoon, each of them about ten minutes long. Of course, as was pointed out in the report, rest periods are not necessary in occupations where pauses are in the nature of the work. This would particularly apply to the varied processes in a cotton mill, where the machine operations require attention only when something is wrong.

These rest periods in a cotton mill may run somewhat as follows:

Twisting	10-20%
Weaving	10-20%
Carding	20-40%
Spinning	20-50%
Warping	30-50%

Incidentally this reveals one of the fallacies that surround the limitation of working hours by general legisla-

tion which covers all industries. If the intent of such a law is to prevent undue fatigue it might very easily fail to attain its purpose in certain strenuous industries while unnecessarily limiting the earning power of workers in such industries as cotton manufacturing, where the free time is obviously so great and the work at no time severe.

It is generally acknowledged that New England cotton manufacturers have been pioneers as far as this country is concerned, in recognizing the value in dollars and cents of proper working conditions for operatives. Francis Cabot Lowell lived before the era of commercialism, but, even then, he saw plainly that in order to operate the mills he must have help, and to secure the only help available at that time he must offer proper inducements. An ample wage was not sufficient for the independent native New Englanders,—they had to be assured of proper home and working conditions, all of which were given them in the splendid functioning of the “Lowell Factory System,” already outlined in these pages. As someone has said, it was a money-making humaneness, and it was justified by the results obtained.

Mill managements, especially in later years, have often been severely criticised for what has been assumed to be their indifference to the welfare of the operatives. Nevertheless it is true that no great industrial enterprise reveals so consistent an interest over so long a period as is to be found in New England mills.

It was in the New England cotton mills that proper mill heating was first introduced. As cotton manufacture largely rests on the nimbleness of the operatives' fingers, it clearly paid to warm the mills. Pure air, also, by means of proper ventilation, was recognized as important in influencing the production of the operatives.

In the early part of the 19th century hospitals were few; there is record of but three in all New England. From the beginning of the mills in Lowell, however, it was required

that each tenement house should keep one room unoccupied for use in case of illness, while suitable medical attendance was always quickly rendered. The mill corporations founded a hospital in 1841; the first one in the country, and probably in the world, to be established by an industry. It is still in use, but greatly enlarged.

The first brick sidewalk in Lowell was in front of the boarding houses and across the yards to the mills in order that the operatives might avoid wetting their feet.

Woodbury states that running water was furnished throughout the mills and in the factory tenements in advance of any water works in New England.

The first use of steam heat was in the cotton mills, while the first sewerage system in New England was installed when the Lowell mills provided sewers to carry away the waste water from the bleacheries and dye houses.

The early mills were lighted by sperm oil, and later by kerosene, but in advance of town gas works the cotton mill corporations put in their own plants. The first large demand for electricity came from the textile mills.

These few instances serve to show that the New England cotton manufacturers, including those in Lowell, were the first to support those protective and sanitary measures, the application of which not only maintained the morale and health of the workers, but proved to be of a sound financial value. Their methods forecasted the welfare work of today; the principle upon which they were built,—that of the dividend-paying qualities of humanitarianism—remains unchanged.

The early corporations found the immigrant hordes an apparently unsurmountable barrier to an ideal community life. Present day employers recognize a challenge and a problem which must be met and solved for the good of the industrial community.

The great number of immigrants coming to the United States have been between the ages of sixteen and twenty-

five — past the age of compulsory school attendance.

The duty and opportunity of the government and of the community is, first, to protect the immigrants against fraud and exploitation, second, to give them an opportunity to learn the English language and to secure a working knowledge of our laws and institutions, and third to provide proper working conditions.

What Lowell is doing is indicated in the following account of *Welfare Work as it is Conducted Today in a Representative Lowell Mill*.

AMERICANIZATION CLASSES—Course of three years. At graduating, certificates of proficiency in English and civics are given. According to nationality distribution in this mill, almost 40 per cent of workers are Americans, largely naturalized.

WOMEN'S SOCIAL AND EDUCATIONAL CLUB—Has many activities, athletics, dramatics, domestic science, etc.

WOMEN'S INDUSTRIAL CLUB—Gave a Christmas tree to 1000 children.

A newspaper article says in part, that work done at this mill is varied. A perfect network of welfare is going on. At the very bottom is the "First Aid" Department, where two nurses are constantly employed, one to deal with accidents, and the other to go to the homes of the employes. This latter nurse has been of special benefit in maternity cases, and has given to mothers and prospective mothers valuable information and care.

A cafeteria lunch room within the mill is managed by the employes, the corporation supplying the room and the employes purchasing the food. Prices are very low and the food is good. The room is large and airy, with a good dancing floor, flowers are blooming in the windows, and groups of women with fancy-work often gather about the tables, all appearing very jolly and happy. Adjoining this lunchroom, which is also used for dancing, is a recreation room where employes may rest or play. One of the oper-

atives has been in the mill thirty-one years, and he, with two other men, who had seen long service, declared that he could not be "chased away."

The overseers and second hands of the mill, about seventy-five in all, are sponsors for what is known as the Social and Educational Club. These sponsors look after the other organizations in the mill. Any needs are communicated to the S and E Club and they take care of them. The women's club elect their own officers, have dances and other social gatherings and have had several banquets at which noted speakers have appeared. Sports are carried on under the sponsorship of the mill. Boxing matches are held in a specially fitted arena two or three times a month in the winter season. A baseball team, a soccer football team and a league of bowlers with nine teams are organized in connection with the athletic activities.

A department of cooking and home economics has been in progress at the mills for several years. Dressmaking is taught in the classes, and exhibitions of the work are held. In connection with these classes, home nursing and hygiene are taught by the two nurses of the staff.

There is a naturalization class, both for men and women.

In the Americanization classes, oral English, French, mathematics, history and civil government are taught. Of a graduation exercise the press stated, "To say that their work was a revelation is putting it mildly. Poetic recitations, analytic papers dealing with the value of Americanization schools, historic sketches of the mills, tracing in an admirable manner the evolution of mechanical appliances and labor conditions, all went to prove conclusively the remarkable progress possible even under a limited schedule if the school be well organized."

As an instance of the effectiveness of welfare work among the operatives in a certain mill, the following is related to show how work is done. A man and his wife, both workers in the mill, became ill. Upon investigation

it was discovered that they were in rather a bad way. The stove was broken,— a mechanic was sent from the mill to repair it. The furniture needed repairs,— a carpenter mended it. More bedding was needed,— it was supplied from the mill. Whatever was necessary in order to relieve conditions was done in the most logical and effective way, and as a neighborly service.

These are some of the activities in a representative mill in Lowell. Many other mills in Lowell and elsewhere are doing this sort of community work. These pages afford no proper place for an extended discussion but it would certainly astonish many people who are prone to gather “their facts” from more or less prejudiced sources, to know that mill managements generally are interested in the social, as well as the industrial, side of the lives of the operatives.

That medical service is an integral part of welfare work is rapidly becoming recognized by employers. Moreover, with many of them it has been a matter of experience that with preventative medical work and an efficient health service, production has been increased and there has been a considerable reduction in labor turnover. Aside from the humanitarian principle involved, therefore, and viewed purely as a matter of business, the supervision of the health of workers produces results almost as tangible as those from an investment in machinery or any other equipment.

In the summer of 1920, the National Industrial Conference Board made a study of ninety New England plants, in order to determine the extent to which health supervision of employes was being practised. Twenty-three of these plants were textile mills, with over 80,000 employes. Among them, there were 9 physicians employed full time, 14 part time and 4 on call. In all, 53 nurses were employed. In addition to the nurses, there were 9 dispensary clerks and 4 so-called “First Aiders.” Aside from personnel, the service generally consisted of, first, suitable and

convenient quarters, located, in most cases, on the first floor; second, equipment such as instrument and drug cabinets, dressing table, etc.; and, third, drugs and supplies.

If such a thing were possible, it would be of extreme interest to know how much weight is generally given to the benefits derived from welfare activities in the event of labor disturbances. Do the operatives strike less often and return sooner in a mill where an active personal interest has been taken in them? In the case of the mill previously cited, where the workers stated only a few days before a strike occurred that they could not be "chased away," was there less disorganization than in mills in the same neighborhood where welfare work was not a feature? The only safe conclusion, in all probability, is the one pointed out by the Bureau of Labor when it states that "the mistake must not be made of supposing that welfare work will prevent discord when even cordial relations, the best of working conditions, and good wages have failed in this at times." Nevertheless, though few employers would make any very definite statement on this subject, the indications are that, other things being equal, welfare work reduces the labor turnover, lowers the sickness and accident rate, and is conducive to a better feeling on the part of the working force.

CHAPTER XIII

HOURS OF WORK

In the early years the working hours in the mills were very long — from five o'clock in the morning to seven in the evening, with a half hour each for breakfast and for dinner. This meant thirteen hours a day or seventy-eight hours a week of six days. However, those who relate the history of those days, among them several who at one time were mill girls, are careful to state that although the hours of work seemed long, yet the operatives were not over-worked. They were obliged to tend no more looms and frames than they could easily take care of, and the supervision was not constant. Time to sit down and rest was afforded; note was made by one writer that it was no uncommon practice for a girl to sit idle at least fifteen minutes at a time. The youngest girls, called "doffers" because they doffed or took off the full bobbins and replaced them with empty ones, worked only a quarter of an hour at a time, but they had to remain on duty the full thirteen or fourteen hours a day. It was not until 1842 that hours of labor for children under twelve were restricted to ten a day. There was some night work in the early years, for which the operatives were paid in full.

The topic of liveliest interest among working classes in the United States always has been the normal working day, and, in the cotton manufacturing industry, the struggle for a shorter work-week has been in existence practically as long as the industry itself. Within three years after the opening of the first mill in Lowell the Senate of Massachusetts was investigating the question of child labor, although nothing was done. However, this began the agitation, which, unorganized at the start, has since been the cause of more controversy than all other subjects combined in the history of the industry.

The first mention of any organized effort to obtain short-

er hours is in the minutes of a meeting to form a general trades union, held in Boston in 1834, in the Common Council Room. The main subject considered was a reduction of the hours of labor, but the employment of women and children in manufacturing establishments was also discussed. Nothing was achieved, however, and, the following year, when the union, formed at this first meeting, desired to meet again to discuss the shorter hours movement, the use of a hall was refused by the authorities of Boston. No further mention of the union can be found.

In 1836, Protectionists were then endeavoring to persuade the American people that manufactures ought to be developed, even at the expense of public aid. John Quincy Adams had declared in a report on manufactures that cotton mills were "the principalities of the destitute, the places of the poor." This led Seth Luther, a mechanic, to investigate the condition of the manufacturing population of England and the United States in order to determine whether manufactures were, after all, so desirable when viewed from the standpoint of the laboring classes. The result of this investigation may be found in detail in the Documentary History of the American Industrial Society, Volume 7, page 132.

Briefly, in his report Luther stated that he found cases of cruelty to children and a certain amount of child labor. The work-day was varied from 12 to 15 hours; averaging 13 hours in the New England mills. Other points of criticism were that certain regulations made when the boarding houses were in operation were considered to be "cruel and oppressive," — to wit, that the operatives were taxed by the companies for the support of religion, — in general, that the lives of the employes were regulated outside as well as inside the factories. He relates that windows were nailed down, the operatives thereby being deprived of fresh air, and cites a case of rebellion on the part of a thousand female workers on account of tyrannical and oppressive treatment.

In no industry in the United States were the hours of work less than eleven or twelve a day, until 1840, when President Van Buren signed a general order introducing a ten-hour system thereafter into the Navy Yard at Washington. This example was followed in other navy yards and soon became somewhat general in factories. In the cotton manufacturing industry, however, there was no such reduction. Although the conflict of workers for shorter hours has made headway, particularly in regard to the hours of labor for children under twelve, which by this time were limited to ten a day, yet for adults, hours were practically the same. Agitation, however, was becoming stronger. By 1842, the movement began to edge its way into politics. Records of petitions presented to the General Court, headed, "The Ten Hour Representatives Association," indicate that some sort of an organization existed. The first petition to be presented, in 1842, by Lowell operatives, was curiously worded "that the length of the laborer's day should not be defined by law but be left to be determined by the power of the employer or the caprice of labor." Interpreted, this would mean that in case of an argument or open disturbance the law could not interfere, and it was left employer and laborer to decide as to the proper work day. Were such a law in force today it takes very little imagination to see the result.

Notwithstanding that this first petition produced no result, it was followed two years later by another, also without result. This one did not include reference to how long operatives should work, but asked that changes be made in the charter of manufacturing corporations so as to forbid the running of machinery more than ten hours a day.

About this time, as a result of a meeting held in Faneuil Hall, the New England Association of Workmen was formed, primarily to extend the shorter-hour movement. During its brief existence of three years, the association held frequent meetings and also established two periodi-

cals, the "Lynn Awl" and the "Voice of Industry," the latter published in Lowell. The meetings of this association were open to all and attracted many so-called radicals of the day,—among them Wendell Phillips and the Brook Farm coterie, who, with the Socialists practically captured the organization. This they fully achieved, in 1845, at a meeting in Boston, which was poorly attended owing to lack of notice. Horace Greely was present at this meeting, as well as Robert Owen, the father of American Socialism, who made a stirring address. After the meeting, there is no indication that whatever organization existed busied itself with the ten-hour movement; in fact, the original association achieved little beyond the distinction of being the first body of any size to realize the support to be gained from the combined efforts of women; in this case, the female operatives in the mills. Whatever impetus was given to the movement during the association's lifetime was the result of a society organized by the factory girls in Lowell which reflected the intelligence and energy attributed to them at this time. Beginning with fifteen in January, it grew rapidly, and by May, the membership was five hundred, with chapters in other textile towns. Although no tangible result followed, the interest created never died out and was an asset in future efforts.

Regularly, for the next two or three years, the Lowell operatives joined with workers from other mill towns in presenting petitions to the General Court. By now, they seemed to have realized that a gradual reduction in hours of work might be more easily gained, so these later petitions asked for an eleven-hour day, instead of the ten-hour day previously desired. Again, the matter was referred to a committee, which reported against any legislation.

These petitions particularly emphasized the injustice of the clause in the "Regulation Paper" each newly engaged operative had to sign. The objectionable clause stated that the operative was considered engaged for twelve

months and that those leaving sooner would not receive a regular discharge. Inasmuch as an operative could not receive employment at a mill after once having been "dishonorably discharged," as the lack of an "honorable discharge" would imply, this clause was keenly resented, particularly as it was rigidly enforced.

During the time the petitions were being presented, some points had been yielded by employers. In Lowell, for example, the corporations made an extension of time for meals to 45 minutes.

Progress in the shorter-hour movement was hindered by the period of depression which existed between 1848 and 1850. For many months, a number of mills were idle in Lowell and there was great distress among the operatives.

In 1850, another petition was presented. By this time, the Workmen's Association had entirely vanished and there is no record of another having taken its place. This petition resulted in legislative consideration. A Committee from the House and another from the Senate were appointed to look into the matter. In their reports, both refused to recommend action on a ten-hour day, stating to the operatives that the inevitable effect of a ten-hour law in Massachusetts, before similar legislation was enacted in neighboring states, would be "to close the gate of every mill in the state." They also warned that a reduction in wages would follow.

The first real contest for shorter hours began after the resumption of business following the hard times in the late forties. In 1850, Benjamin F. Butler, of Lowell, made a campaign for the Legislature on the issue of a ten-hour day. The mills posted notices to the effect that any man who voted for Butler would be discharged, thus giving him the very chance he desired,—that of a spectacular appeal to the people. At an indignation meeting held by the operatives, he made a speech which counted largely in electing him, and, although a ten-hour law was not secured by him, it was not long thereafter that the one establishing an

eleven-hour day was put into effect, whether by Butler's efforts or not is open to question.

A year later, another candidate, one Farnsworth, ran for the Legislature on the ten-hour issue. He, too, was elected but failed to secure the passage of his bill.

The next definite move, after the petition of 1850, was an unsuccessful attempt to pass a bill providing that children under fifteen should work not more than ten hours a day. For several years at very frequent intervals, however, ten-hour meetings were held, these proving to be the best method of keeping interest in the movement actively before the people. At a gathering in Lowell, in October, 1853, two or three thousand people were present, the operatives in this town and in Lawrence being the most active in the cause. The reason for this perhaps lay in the fact that here still remained the native American element making a last fight for reformed conditions before giving place to foreign labor.

In 1853, a half-victory was secured in that hours were reduced to eleven per day. The ten-hour agitation, however, was continued and, in 1855, a bill received consideration in the House, the committee to which it was referred reporting unanimously in favor of the proposed legislation. The next year it reached the Senate, which also approved the measure.

Right here, it is of interest to note the arguments for and against a ten-hour day, which were most commonly advanced by operatives and employers. The latter maintained that the proposed shortening of the work-day would reduce the output of the mills and would lead to a corresponding reduction in wages. To this, the operatives answered that the ten-hour system had been installed in many other industries in Massachusetts and wages had never been reduced. On the contrary, because of an over-production of goods in the cotton mills of Fall River, in 1848, a reduction in wages was contemplated by the corporations. A rumor of this

reached the workers and they struck at once in protest against the proposed cut.

The employers further maintained that, if the ten-hour system had been successfully installed in other industries, it was because conditions in cotton mills were different,—that, in them, the output depended almost wholly on the speed at which the machinery was run. The operatives' answer to this was that much time and material were wasted in stoppage and breakage due to overtaxing those who attended the machines.

Thus, year by year, the struggle for a ten-hour law went on, but without success. Then came the Civil War, which occupied the attention of the people and little was done in the way of labor legislation of any kind. For at least five years the ten-hour measure was disregarded. Many cotton mills were closed and the operatives scattered. By 1865, however, the cotton fields of the south were reopened to cultivation and northern mills resumed operation. The demand for cotton goods was great, but there was a great scarcity of labor. As previously noted, it was at this time that the number of foreign workers increased rapidly in the mills. From Lowell, Lawrence, and other textile towns, agents were sent to Canada and Great Britain to secure workers, the result being that the native New England girls, who had returned to their homes during the war, never again entered the mills.

The new element, however, immediately revived the agitation for shorter hours with the difference that they demanded an eight-hour instead of a ten-hour day. At this time, the work-day was still eleven hours long, with two hours overtime three evenings each week. It was estimated that one-third of the overtime workers were children, and the majority of them under 18. Eight-hour meetings were numerous. Particular mention is made of a picnic held at Beverly, Massachusetts, in 1865, which was attended by over four thousand enthusiasts.

The following year, 1866, a bill proposing an eight-

hour day in the textile industry was debated in the Massachusetts House of Representatives and finally defeated. This, coupled with the fact that there was no scarcity of labor caused the failure of the eight-hour movement. An attempt was made to raise a fund of \$5,000 to carry it on, but met with no success, as money was scarce. By 1867, the agitation for an 8-hour day had completely died.

With it out of the way, the ten-hour movement emerged again, this time under the leadership of a Lowell man, James M. Stone, who in a short time was sent to the Legislature. This made it necessary that the work of organization and agitation fall on someone else,— as it happened, a Lawrence man, and that city soon became the center of the movement.

In 1867, an act was passed which forbade the employment of any child under ten years of age in any manufacturing or mechanical establishment, and any child under fifteen years of age unless he had attended school at least three months during the year next preceding such employment, and that no child under the age of fifteen years should be employed more than sixty hours a week. About this time, the first voluntary successful reduction of hours in a cotton mill took place when the Atlantic Mills in Lawrence instituted a ten-hour day. To meet the loss in production which it was feared might ensue, looms were speeded up about 4 per cent and other machinery in like proportion. Moreover, operations were put on a piece-work basis. By these means, wages were not essentially changed by the shortening of the day, so that the reduction was considered to have worked successfully.

This same method had been employed some years earlier in a Lowell mill but was widely criticised because of the supposed over-working of the operatives which it involved. One of the factory girls related her experience in a letter which was published in a Boston newspaper, in 1844, as follows:—

“ In May, 1842, the last month before the reduction of

wages, I tended two looms, running at the rate of 140 beats of the lathe per minute. In 24 days I earned \$14.52. In the next month, when speed and prices had both been reduced, I tended 4 looms, at a speed of 100 and earned in 24 days \$13.52. I increased my earnings every month a little, by the gradual increase of the speed, as I grew accustomed to it. In January, 1843, the speed was raised to about 118, and the price reduced still lower. I earned in that month, in 24 days on 3 looms, \$14.60, and my work was in no degree harder. The speed was raised just as we could bear it, and often, almost always, at our own request, because with the increase of speed our pay increased.

“In June, 1843, I still tended 3 looms, and in 24 days earned \$15.40, and in June, 1844, feeling able to tend 4 looms at a speed of about 120, I received \$16.92 for 24 days work.

“I affirm that I have not in any of these, or other months, overworked myself. I have kept gaining in ability and skill, and as fast as I did so I was allowed to make more and more money, by the accommodation of the speed of the looms to my capacity.”

Summary of the above showing that speed and prices were reduced but there was a 25 per cent increase in earnings.

<i>Date</i>	<i>Looms</i>	<i>Beats</i>	<i>Earnings 24 days</i>
May, 1842	2	140	\$14.52
June, 1842	4	100	13.52
January, 1843	3	118	14.60
June, 1843	3		15.40
June, 1844	4	120	16.92

As an indication of the earnestness and vigor with which the movement for shorter hours was conducted, there is a record of forty-five petitions for a ten-hour law for women and children having been presented in the House and sixty-five in the Senate in one year, 1870.

The next year, twenty-six were presented in the House and twenty-two in the Senate.

In 1873, a ten-hour law for women and children was passed in the House, but rejected in the Senate. The following year, a bill was passed establishing the hours of labor at sixty per week for women, and for children under 18 years of age.

Various strengthening amendments were added to this enactment, until, by 1909, legislation had reduced the hours of labor for women and children in manufacturing establishments to fifty-six a week. Two years later, they were reduced to fifty-four.

However, this applied only to women and children; there were no legislation on the hours for male labor.

The present law limiting the work week to 48 hours for women and minors was passed in 1919.

According to the National Industrial Conference Board's report on hours of work in the cotton manufacturing industry, data for which was obtained from an investigation made in 1917, nine-tenths of the employes in northern cotton mills at that time were working on schedules of 54 hours a week. This practical uniformity of the work-week in the North, the Board points out, is largely the result of state legislation restricting hours for women. On account of the high proportion of women workers this legislation has the indirect effect of fixing hours for men as well. In southern cotton mills at that time the prevailing work-week was sixty hours long. In both northern and southern mills, the Saturday half-holiday was almost universal.

As to the effect upon production which may have followed a shortening of the work-week, the Board states that in the northern cotton mills included in the study there was "a substantially proportional decrease in output. The fact of a decrease is indisputable. Because of the large number of influences involved, a precise measurement of

the effect of any one is almost impossible, but the evidence establishes beyond a doubt that the reductions in hours were largely responsible. In some instances a part of the loss was promptly made up by increased efficiency of workers, but this experience was not general."

Furthermore, the investigation developed no evidence of an appreciable difference in health conditions as a consequence of a reduction from 58 or 56 hours a week to 54 hours.

Later, another study was made by the Board, in order to determine whether in certain major industries a shorter schedule of hours could yield the same or practically the same production as a longer schedule. The broad results of this study showed that in the northern cotton industry reductions to less than 56 hours per week involved a loss in output in more than 90 per cent of the establishments, in a majority of cases this loss being approximately proportional to the reduction in time. In the wool and silk industries, reductions to 54 hours, and in a number of instances, to 50 hours, had not resulted in a production loss in a considerable proportion of the mills reporting, while, in the boot and shoe industry it was found that maximum production could be maintained on a schedule substantially less than 54 hours per week.

<i>Industry</i>	<i>Hours after Reduction</i>	<i>Output Increased</i>	<i>Estab- lishments Output Maintained</i>	<i>Output De- creased</i>
Cotton	54	..	3	49
	55	..	3	13
Wool	54	6	7	55
Silk	50	2	7	49
	54	..	3	8
Boot and Shoe	49½ — 50	..	5	28
	52 — 52½	1	6	6
	54	..	6	13

The above study confirms the oft repeated assertion that

the speed of the machinery in a cotton mill practically controls production. It is impossible to further increase this speed so as to maintain the same production in a shorter work day.

Below is given a list of restrictions to be found in the laws of the various states mainly concerned with the cotton industry. You will note that there are 16 laws in Massachusetts, five in Maine, six in New Hampshire, eight in Rhode Island, five in North Carolina, four in South Carolina, and four in Georgia:

MASSACHUSETTS: 1. License of Engineers and Firemen. 2. Schools and Employment Certificates. 3. Continuation Schools. 4. Minimum Wage. 5. Weavers Specifications. 6. Lockers. 7. Medical Chest. 8. Workmen's Compensation. 9. Hours of Labor, Women and Minors. 10. Expectoration. 11. Drinking Water. 12. Humidity. 13. Suction Shuttles. 14. Inspections, Investigations, Regulations. 15. Prohibited Employments — Minors. 16. Guards on Machinery.

MAINE: 1. License of Engineers and Firemen. 2. Schools and Employment Certificates. 3. Workmen's Compensation. 4. Hours of Labor, Women and Minors. 5. Prohibited Employments — Minors.

NEW HAMPSHIRE: 1. Schools and Employment Certificates. 2. Medical Chest. 3. Workmen's Compensation. 4. Hours of Labor, Women and Minors. 5. Prohibited Employments — Minors. 6. Guards on Machinery.

RHODE ISLAND: 1. Schools and Employment Certificates. 2. Workmen's Compensation. 3. Hours of Labor, Women and Minors. 4. Drinking Water. 5. Suction Shuttles. 6. Inspections, Investigations, Regulations. 7. Prohibited Employments — Minors. 8. Guards on Machinery.

NORTH CAROLINA: 1. Schools and Employment Certificates. 2. Medical Chest. 3. Hours of Labor, Women

and Minors. 4. Inspections, Investigations, Regulations. 5. Prohibited Employments — Minors.

SOUTH CAROLINA: 1. Schools and Employment Certificates. 2. Hours of Labor, Women and Minors. 3. Inspections, Investigations, Regulations. 4. Prohibited Employments — Minors.

GEORGIA: 1. Schools and Employment Certificates. 2. Hours of Labor, Women and Minors. 3. Inspections, Investigations, Regulations. 4. Prohibited Employments — Minors.

Below is given a list of the more important laws with references:

HOURS OF LABOR, WOMEN AND MINORS

MASSACHUSETTS: 48-Hour law, women, and children up to 18. Not more than 9 hours in any one day. G. L. 149-58.

MAINE: 54 hours, not more than 9 hours per day except to shorten one day in the week. Rev. Statutes 1916, page 1650, in account of referendum, not chapter numbered. Applies to women, and children under 16.

NEW HAMPSHIRE: Acts of 1917, Chapter 196. Women, and Minors under 18, 54 hours weekly. 10 $\frac{1}{4}$ hours daily.

RHODE ISLAND: Present law Acts of 1915, Chapter 1218. 54 hours weekly, women and minors under 16. 10 hours daily.

NORTH CAROLINA: 60-hour week for women and minors. No more than 11 hours in any one day. Cons. laws 1919 - 6554.

SOUTH CAROLINA: Acts of 1922 - 567. 55 hours per week in cotton and woolen mills. 10 hours daily.

GEORGIA: Acts of 1911, page 65. 60 hours. Not more than 10 hours daily.

SCHOOLS AND EMPLOYMENT CERTIFICATES

MASSACHUSETTS: Up to 14 child must go to school. From 14 to 16 until equal to sixth grade. Illiterates, evening school, 16 - 21. General laws 76, 1 - 2 - 3.

MAINE: Up to 15 child must go to school. From 15 to 17 if illiterate. Revised Statutes, 16 - 66.

NEW HAMPSHIRE: Acts 1919, Chapter 84. Up to 14, and up to 16 if equivalent of elementary schools is not reached.

RHODE ISLAND: Present law, Acts 1917, Chapter 1492. Up to 14. Up to 16 unless employed up to standard of first eight years' schooling.

NORTH CAROLINA: Up to 14. Cons. Laws, Section 5758.

SOUTH CAROLINA: Up to 14. Four consecutive months or 80 days. Acts 1919, Chapter 135. No child under 14 to work, Acts 1916 - 361.

GEORGIA: Acts of 1916, Page 101. Up to 14, four months. Acts 1914, Page 12. Children under 14 not to work in factories, except children of widowed mothers, or orphans.

WORKMEN'S COMPENSATION

MASSACHUSETTS: Funeral Expenses, \$150. G. L. 152, Acts 1922, Chapter 368. Two-thirds average weekly wages, \$7 - \$16. 500 weeks. \$4000 maximum, 10-day waiting period in case of injury. In case of death: G. L. 152, Section 31. Acts of 1922, Chapter 402. \$16, widow and more than three children. \$14, widow and three children. \$12, widow and two children. \$10, widow and one child. Not more than 400 weeks.

MAINE: Rev. Statutes 1916, Chapter 50, Amended Ch. 238, Acts 1919. Disability: two-thirds weekly wages, \$6 - \$16. \$6000 maximum, 500 weeks. 7 days waiting period, Acts 1921, 222 - Section 14 and Section 9. In case

of death: Acts 1921, 222 - Section 12. Two - thirds weekly wages, \$6 - \$15, 300 weeks. Not more than 300 weeks. Maximum: \$4000.

NEW HAMPSHIRE: Acts 1911, Chapter 163, Section 454. Death, maximum 150 times average weekly wages, Disability, 14 days waiting period. One-half weekly earnings, \$10 weekly maximum. 300 Weeks.

RHODE ISLAND: Chapter 831, Pub. Laws of 1912. Death, not amended since passage, P. L. 1912, 831 - 11 - 6, one-half weekly wages, \$4 - 10, 300 weeks. Disability, one week waiting period, Acts 1921, Chapter 2095 - 4. If disability over four weeks, back to date of injury one-half weekly wages, \$7 - \$16. 500 weeks. \$5000 maximum.

NORTH CAROLINA: No law.

SOUTH CAROLINA: No law.

GEORGIA: No law.

PROHIBITED EMPLOYMENTS — MINORS

MASSACHUSETTS: Under 14 — No employment in various businesses in which the textiles are included. 14 - 16. Variety of dangerous machinery. Under 18 — Extra hazardous employment. G. L. 149 — 60 - 61 - 62.

MAINE: Under 14. No employment in textiles. Revised Laws 49 - 20. No other laws as above.

NEW HAMPSHIRE: No laws as above. But no employment before 14 in textiles.

RHODE ISLAND: Same as New Hampshire. Acts 1916, Chapter 1378. No minor under 16 to clean machinery in motion. G. L. 1909, Chapter 78 - 6.

NORTH CAROLINA: No law except general 14 year limit.

SOUTH CAROLINA: Criminal Code 427. Children under 14 not to work about certain machinery in motion.

GEORGIA: Acts of 1916, Page 101. Up to 14, four months. Acts 1914, P. Children under 14 not to work in

factories, except children of widowed mothers, or orphans, 12.

MINIMUM WAGE

MASSACHUSETTS: Law in effect, non - mandatory. General Laws, 151 - 1 - 15 inc.

MAINE: No law.

NEW HAMPSHIRE: No law.

RHODE ISLAND: No law.

NORTH CAROLINA: No law.

SOUTH CAROLINA: No law.

GEORGIA: No law.

INSPECTIONS, INVESTIGATIONS, REGULATIONS

MASSACHUSETTS: Occupational diseases. G. L. 149 - 11
General inspections. G. L. 149 - 5
Health and Safety. G. L. 149 - 6
Eyesight and Lighting. G. L. 149 -
114 - 116

Ventilation. G. L. 149 - 117.

Dust. G. L. 149 - 118.

MAINE: No laws equivalent to above.

NEW HAMPSHIRE: No laws equivalent to above.

RHODE ISLAND: Water closets. Acts 1920, Chapter 1907-8.
Dressing Rooms. Same.
Drinking water. G. L. Chapter
78 - 16.

Heating, Lighting, Sanitation,
Safety of egress, guarding of belt-
ing, gears, etc. Same. Section 10.

NORTH CAROLINA: Separate toilets, men, women and
races. Cons. Laws 1919 — 6559. Seats for women, Cons.
Laws 1919 — 6555.

SOUTH CAROLINA: Same as above.

GEORGIA: Seats for women. Code 3150.

GUARDS ON MACHINERY

MASSACHUSETTS: Strict Law. G. L. 149 — 127 - 128 - 131. 131 applies to shuttles.

MAINE: No law.

NEW HAMPSHIRE: Acts 1917 — 183. It shall be the duty of every such employer to provide such safeguards, safety devices, — lighting facilities, etc., as may be reasonably necessary.

RHODE ISLAND: G. L. 1909, Chapter 78 - 6. All belting and gearing shall be provided with proper safeguard.

NORTH CAROLINA: No law.

SOUTH CAROLINA: No law.

GEORGIA: No law.

CHAPTER XIV

THE RISE OF LABOR UNIONS — LABOR DISTURBANCES IN LOWELL

Labor organizations were at first benevolent societies to care for employes in sickness or financial distress. They also acted as censors of quality of work, and of morals. When legally incorporated such organizations were bound not to interfere with wages or hours of labor. It was after the Revolutionary War that trade unions were organized for protection against employers who cut wages, and, looking solely to profit, took unfair advantage of the employes.

Beginning in the year 1789 small groups of skilled workmen formed powerful local organizations to take part in fixing wages, hours of work, and general conditions of industries. Being purely local and composed of workmen of a single industry, there was no idea of combined action among these societies. As organization gave strength to demands in regard to wages and hours, labor early realized that a group of men on strike had power to force action on the part of the employers. There had been a strike in Philadelphia in 1786, the first one on record in the United States. In 1806, backed by the labor organization, the printers in Philadelphia again went on strike. In the earlier strike there had been no disturbance; in this, those willing to work were beaten back, and shop windows broken.

When the labor organization began to fix "price lists" or wage scales, the employer was notified by a representative of the union, a veritable "walking delegate," who presented him with a summary of the proposed changes. Some labor unions selected "tramping committees" to visit the shops, and to see if union workmen were "honest to the cause."

Since these men were obliged to give up all other work, it was considered only fair that they should be paid for their services.

In the early thirties the unions grew rapidly. The development of facilities for correspondence and travel drew the various units together. In 1835, five trades held national conventions, one of them the hand loom weavers. This added power resulted in demands for increased wages.

The panic of 1837 seriously affected the financial system of the United States. England, also in industrial distress, called upon America to pay her debt, and American credit was thus shaken. Mills and warehouses were closed, for no cloth could be disposed of. Wages were cut, but union men had either to accept the cut in wages or lose their positions. There was no question of strike, so great was the number of hungry, non-union workmen ready to fill the places of any who left their work. The unions, therefore, fell to pieces.

In the late forties industry revived. Gold was discovered in California, with the resulting rush of the "forty-niners." Prices rose and the demand for labor increased. The labor unions seized upon this opportunity, and new, national unions of the specific trades were founded. Immigrants were urged to join the associations. In 1850 there were thousands of union men, and the next few years were marked by many and serious strikes. In 1857 came a second panic with results similar to those of the earlier days. Before the unions had had time to recover the Civil War had begun, and all labor went to the support of the government.

The war brought problems and opportunities to the labor unions. There was a demand for manufactured goods. Prices advanced, and industry expanded under the stimulus of the high tariff. Organized labor had to be built up on a national scale.

By the end of the war, there were trade assemblies in many cities, cooperative stores, legislative lobbies, labor press, and thirty powerful national unions of specific trades. In 1864, the Industrial Assembly of North Amer-

ica, meeting in Louisville, stated that the object of the organization was to abolish strikes, and in their place to establish trade agreements with employers. Two years later in Baltimore, the assembly organized the National Labor Union. This lasted until about 1871, when, having fallen into the hands of political reformers, it was practically dead.

The Knights of Labor or to give it the full title, "The Noble Order of the Knights of Labor," grew out of a group composed of tailors of Philadelphia organized as the Garment Cutters' Union. Trade conditions caused this union to lose ground and they reorganized upon a new basis under Uriah H. Stevens, who thus became the founder of "The Noble Order of the Knights of Labor." The membership was at first limited to tailors. The order was very soon greatly enlarged as to scope and covered practically all the industries.

Its growth was exceedingly rapid. While no very accurate information is to be had of its early numbers, the first quarterly report shows a membership of 28, while in 1883, 12 years later, the membership was about 52,000. In three years, however, or in 1886, it was over 700,000.

At this time when in the height of its power it was claimed that it had a membership of a million in the United States and 300,000 or more in Canada.

Terrence V. Powderly was the leader during the period of its greatest success and also in its decline. This decline which followed soon after 1886 caused it to disappear as an industrial factor because of the great strength of the American Federation of Labor.

The guiding spirit in this new industrial movement has been and is Samuel Gompers, who has succeeded in organizing what is undoubtedly the most powerful trade movement the world has ever seen.

LABOR DISTURBANCES IN LOWELL

The first difficulty to be recorded occurred in February, 1836. The strike, or "turn out," as it was called, was the result of two grievances, namely, a reduction in wages and a proposal that the girls pay the amount previously contributed by the corporation toward their board. This sum, 25 cents a week, with the cut in wages, made a difference of about one dollar a week. The operatives, who were very indignant over the double reduction, held meetings and decided to stop work and "turn out," letting the mills take care of themselves. Accordingly, in the middle of the morning's work, they stopped the looms and frames and left. Harriet Robinson in relating her experiences as a mill girl tells that in one of the rooms some indecision was felt after the machinery ceased, and discussion began anew, when a little bobbin girl eleven years old said, "I'm going to turn out whether anyone else does or not," and marched out, followed by all the others. They went in procession to the grove, then on Chapel Hill, and were addressed by sympathizing speakers. Their dissatisfaction subsided or expended itself in this way, and, though the managers did not accede to their demands, they returned to work.

During the first fifty years of Lowell's history as a textile center, or up to 1880, only nine strikes and lock-outs occurred. Of these, one was successful, the result of one was not stated, and all the others failed.

The most notable of these strikes occurred in 1875, when the Mule Spinners' Association of the United States ordered the mill workers to walk out in a few of the mills, more to test the strength of the union than for any other given cause. The manufacturers, however, posted notices in every mill to the effect that if the proposed strike were carried out, every mule-spinner in all of the mills would be discharged. Notwithstanding this, the strike took place and the lock-out of spinners in mills not affected followed the

next day and continued for six weeks. Some of the old spinners returned voluntarily, new employes were hired and ring-spinning was introduced. The employers refused to receive the ringleaders of the strike and some of the others also lost their places, as no new employe was removed to make room for a returning striker. The operatives also signed an agreement renouncing the union.

In 1898 and 1899, there were several small strikes in different mills in Lowell, nearly always for an increase in wages. In December of the latter year an increase of ten per cent was granted in some of the mills, and from that time until February, 1903, there was no difficulty. Then the "Textile Council" demanded another increase of ten per cent, which the agents in all the mills refused because they could not afford to grant it. A strike was called, but the agents forestalled action by posting notices that the mills would be closed for an indefinite period. A month later the State Legislature directed the Board of Arbitration and Conciliation to make an investigation. Their report approved the contention of the manufacturers that they were in no position to pay a higher wage. After a few more weeks, the mills reopened with no change in the wage schedule. In two weeks, about three-fourths of the old operatives returned and in less than a month the "Textile Council" called the strike off. From March, when the strike was called, to the end of June, when it was over, about 15,000 operatives were out of work, while the loss of production was enormous. George Keenan, the famous correspondent, stated at the time that it was his belief, after inquiry, that about two thousand organized workers precipitated the strike while the unorganized were so little informed that the first intimation of trouble came when they found the mill gates closed.

Briefly stated, the industrial history of Lowell, taken as a typical city, up to 1912, included 131 strikes and five lock-outs; 11 of the strikes occurred in the first sixty years,

the remainder taking place since 1890. Of all these, only one, that of 1903 was general, affecting nearly all of the textile mills.

Of these 131 strikes, 25 were won by the striking operatives, 70 were lost, 25 amicably settled, while the results for the remaining 11 were not stated.

Of the 25 won by the strikers, four were for shorter hours, five for an advance in wages, four against a reduction in wages, three for shorter hours and higher wages, and nine for various other reasons.

Of the 70 lost, 17 were for an advance of wages, 18 against reduction of wages, eight for shorter hours and higher wages, and the balance for other reasons.

The record for the last decade continues the history of the disturbance of industrial relations. It is to be noted, however, that during this period there seems to have been a better understanding between capital and labor and a growing disposition to consider more carefully the actual facts in a given case. The appeal to prejudice on either side must eventually yield to the considerations involved in the common good of both capital and labor.

CHAPTER XV

WAGES AND THE COST OF LIVING

In the early days it was generally understood that wages should be governed by the value of a man's work to the community, — in other words, a payment by results. Now, however, the relation of wages to work is largely determined in the popular mind by how much is required to purchase the necessities of life or to maintain a certain standard of living.

The first inquiry into the prices of so-called necessities or, as it is now commonly spoken of, the cost of living, was made by the United States Bureau of Labor in 1901. The results of this study, as well as of some others made by social organizations, were not considered to be very reliable, and nothing upon which definite conclusions could be based was achieved up to the time of the World War. The early studies were chiefly devoted to finding out how much each wage earner actually received and how it was spent, not how much he should have received and how it should have been spent.

It is a matter of general knowledge that wages were lower in all industries in the period immediately preceding the Civil War than they have been at any time since. That this was the case in the cotton manufacturing industry, therefore (Chart A), is not surprising. The most pronounced feature of the chart lies in the picture which it presents of the sudden and abnormal increase in wages at the outbreak of the World War. From 1860 to 1914 they had more than doubled; at their greatest height they had increased sevenfold; and, at the present time, the chart shows that they are a little over five times what they were in 1860. With this increase, however, the wage earner must be considered better off only to the extent of how many more of the necessities of life he can buy with the higher wage. The weekly wage in 1860 was in the neighborhood of \$4.00,

\$3.92 to be exact. This checks with the United States Bureau of Labor Statistics' result as shown in Volume 12, 1921, page 322, where it is stated that in the period of 1842 to 1857 wages of textile operatives were between four and five cents per hour; in 1865, they were about six and one-half cents. On the basis of a 60-hour week, which prevailed at that time, the weekly rates were from \$2.40 to \$3.00 from 1842 to 1857 and \$3.90 in the early part of 1860.

This seems to be a very low rate, particularly when compared with the wages of today, but the value of a dollar lies only in what it will buy, and if the principle of using the cost of living as a basis for a wage schedule is applied to the seemingly low wage in 1860 it is seen that proportionately more could be purchased then than can be secured now with a greatly increased wage.

During the early days in the mills the operatives lived in the corporation boarding houses, paying a relatively small amount for lodging and meals. Then it was possible to obtain these two main essentials in a budget, shelter and food, for \$1.25 per week or about 30 per cent of the average wage at that time. Today the same items form 60 per cent of a budget allowance, or the amount to be expended for the necessities of life. Comparisons between these two proportions cannot safely be drawn, however, without bearing in mind that in the years that intervened there was, of course, a considerable change in standards of living. In other words, the spending today of more than one-half of a budget allowance for articles which formerly could be secured for about one-quarter of the budget does not represent solely an advance in the cost of living. Rather does it indicate the tremendous rise in standards which has taken place in the home of the average American wage-earner in the last half-century. Life today in its complexity demands many more things than it did. Now they are

called necessities; then they were considered to be luxuries.

If data were obtainable on the cost of living during the years previous to the outbreak of the war in 1914 it is more than possible that they would follow the trend of wages as shown on Chart A, that is, a steady rise with intermittent periods of depression until the year 1914. At this time prices began to rise abnormally and in order that earnings might meet these rising costs, the need for increase in wages began to be felt. The principle of fixing a wage scale that would in a measure conform to the cost of living was therefore adopted by the War Labor Board. A typical family was defined as one of man, wife, and three children under 14 years of age. Various standard budgets were prepared and, in principle, it was only a matter of arithmetic to take the total income and in conjunction with a budget prepare a wage rate. This method, endorsed as it was by the War Labor Board, was adopted in many wage disputes and used as a basis for arbitration. However, when the break in the market came early in 1920 and it was to be expected that with lower prices would come lower wages (using the cost of living as a basis of the wage schedule), then the principle was no longer advantageous to labor. As one writer astutely stated, "It (the method of fixing wages by cost of living figures) was powerful in an aggressive fight for higher wages. It was better than a free-for-all scramble, that is, no principle at all, in wage adjustments downwards."

In other words, the principle of bargaining, with the employer, as a buyer, and the worker, as a seller of labor, was displaced by the cost of living principle. It was on this latter principle that the 22½ per cent reduction in December, 1920, in textile mills was made. This, of course, made labor desirous of returning to the bargaining principle and the American Federation of Labor, to all appearances, has rejected the cost of living wage entirely.

The charts which are here presented reveal a picture of wages in the cotton industry which I am sure will be a revelation to many.

Chart A. Beginning with 1860, with the exception of a slight decrease during the few years of the war, they rose steadily with now and then a reaction until 1914 when wages were about two and one-third times what they were in 1860. Then follows the period of the World War and the abrupt and abnormal increase of wages following our entrance into the war. According to the United States Bureau of Labor, in 1920, wages in the cotton industry reached a peak of 220.9 per cent above the 1914 level and after the reduction, which is shown by the curve ending 1922, they were still 148 per cent above 1914.

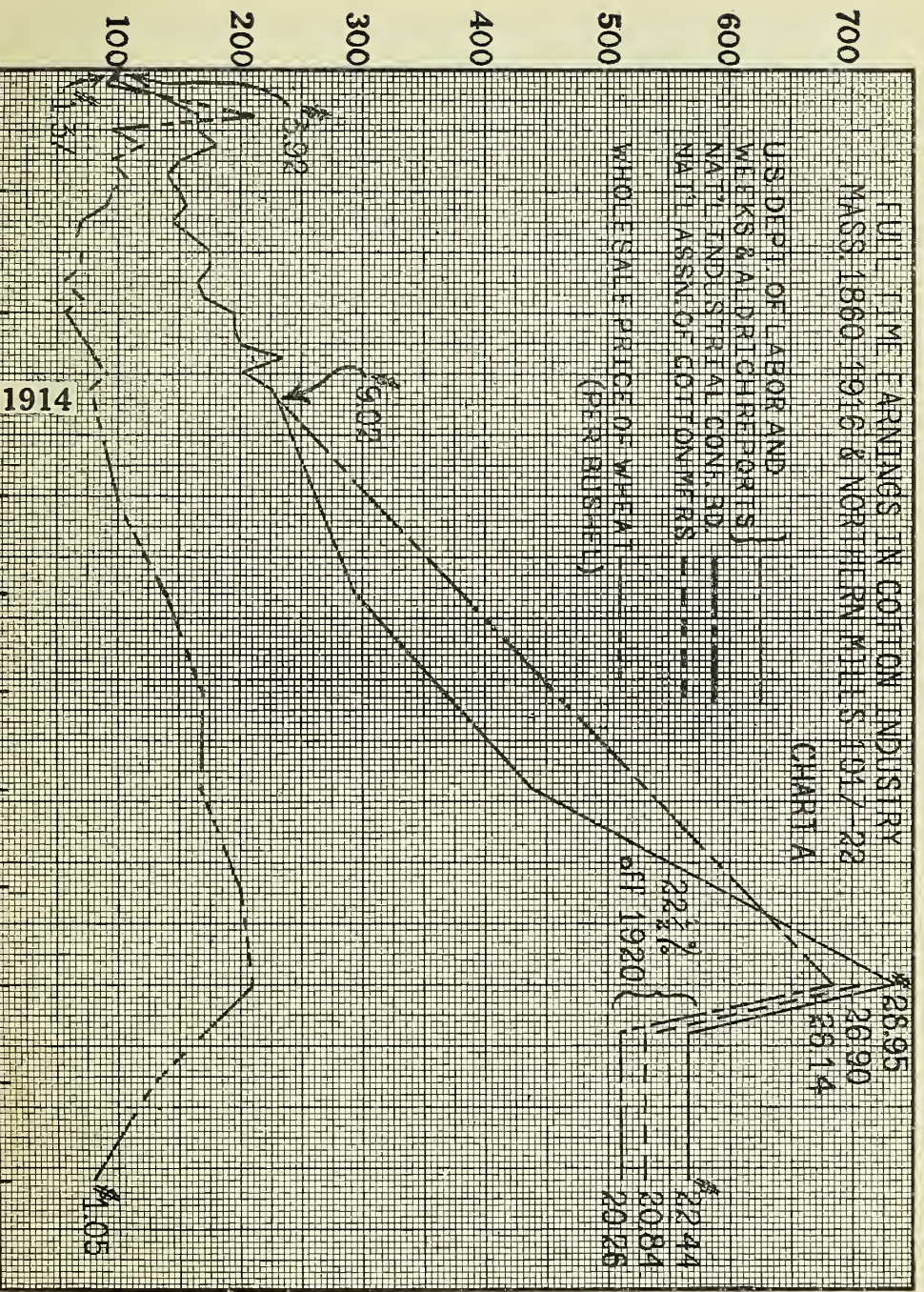
The figures given by the investigations of this Association and the National Industrial Conference Board show slightly different curves from 1914 on. It is significant that now the Labor Bureau figures are the highest and the Conference Board the lowest, while The National Association of Cotton Manufacturers' figures occupy a modest place between the two.

Chart B. There has been a good deal of discussion in this country about the "cost of living wage." This gained prominence in connection with the decisions of the Railway Labor Board. The National Industrial Council for the Wool Textile Industry and Allied Trades in England in 1919 are now working on this plan. In co-operation it was agreed to establish basic wage rates and, also, that as changes in the cost of living compared with 1914 were shown to have reached a stated figure above or below the cost of living, to increase or decrease wages in proportion. This applied to time workers; for others, the cost of living wage varied in proportion so as to maintain the existing proportionate relation of the cost of living wage to that of time workers. This agreement is the foundation of the sliding scale of wages introduced into the

FULL TIME EARNINGS IN COTTON INDUSTRY MASS. 1860-1916 & NORTHERN MILLS 1917-22

CHART A

US DEPT. OF LABOR AND
WEEKS & ALDRICH REPORTS
NAT'L INDUSTRIAL CONF. RD.
NAT'L ASSN. OF COTTON MFRS
WHOLESALE PRICE OF WHEAT
(PER BUSHEL)

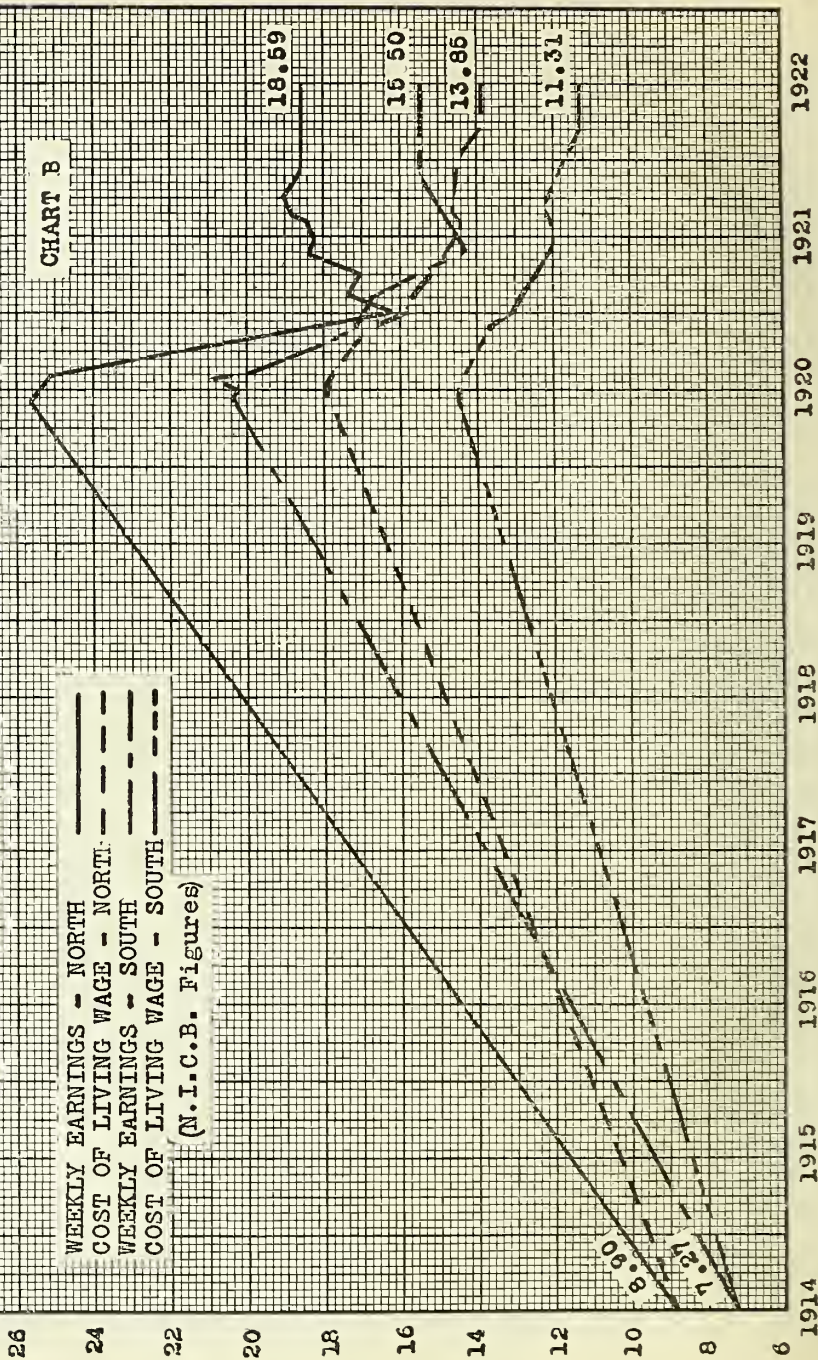


WAGE SCALE IN COTTON INDUSTRY BASED ON COST OF LIVING

CHART B

WEEKLY EARNINGS - NORTH
 COST OF LIVING WAGE - NORTH
 WEEKLY EARNINGS - SOUTH
 COST OF LIVING WAGE - SOUTH

(N.I.C.B. Figures)



English worsted and woolen industries and which has been the means up to the present of keeping harmony and a continuous working arrangement between employers and employed.

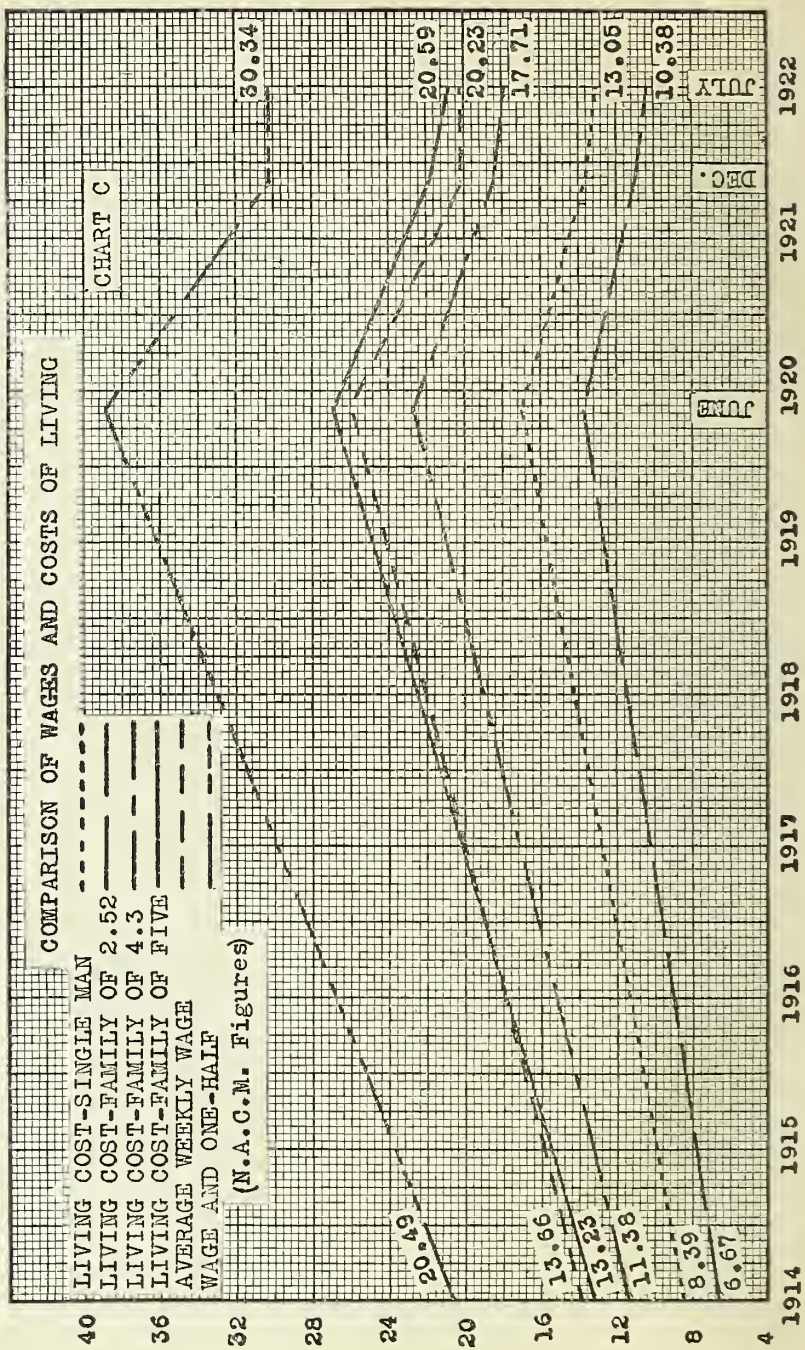
This cost of living wage scale has not been attempted in the United States. Chart B, however, shows what the result would have been if earnings since 1914 had been increased at the same rate as the cost of living increased. The interesting thing is that the actual earnings were always in excess of what the cost of living wage would have been if computed on the basis of the cost of living. It is also to be noted that the widest difference between the two existed when earnings reached their highest point in 1920. This simply means that wages in the cotton industry since 1914 have always exceeded the cost of living.

While the saving to employers upon this "cost of living wage" plan would undoubtedly be great, it is not to be supposed that employes are likely to become enthusiastic over the very general reductions in wages which such a plan would mean to them.

Chart C. This chart was prepared to show the relation of wages in the cotton industry in the North to the cost of living. Results are based on studies made by this Association in 1922. The percentage increases as given by the National Industrial Conference Board were used to determine the cost of living and wage figures for 1914.

It will be noted that the cost of living for a typical family of five was somewhat below the wage level in 1914 and for a year or so thereafter; then it rose above it, where it remains today.

According to the Census, however, the average family in the United States does not contain five persons, but 4.3. On that basis, the cost of living was lower than a single wage throughout the entire period covered in the chart. Again, the Census shows that each wage earner supports, on the average, two and one-half persons. For them, the



cost of living was considerably lower than a single wage. A noteworthy feature is that the cost of living for a family of two and one-half persons was lower than that of a single man, thus corroborating to some extent the oft-stated maxim that "two can live cheaper than one."

On the basis of each wage earner supporting two and one-half persons, there would be two wage earners in the typical family of five. To be conservative, however, a wage rate based on one and one-half wage earners was assumed, with the result as shown in the chart. This, of course, is an arbitrary method, but when considering that large families are by no means exceptional in textile communities, and that statistics show that about one-half of the employes in the cotton manufacturing industry are women and children, it is safe to assume that a wage and a half more nearly reflects conditions than does a single wage.

The wage scales here presented do not take into consideration the very important changes in hours of work which have taken place since 1860. Reductions have been from 60 hours or more in the earlier days to 58, 56, 54 and, finally, to 48 in 1919 for Massachusetts mills. If these figures were to receive consideration the wage of today based on the hours of work as compared with the earlier days would show a proportionate increase.

COST OF LIVING

In 1911, the British Board of Trade made a study of the cost of living in American towns, together with predominant wages and hours of labor for adult males in the principal occupations in Lowell as of February, 1909. This table, together with their conclusions, is given below:

<i>Occupations</i>	<i>Average Weekly Wages</i>	<i>Hours of Work</i>
Building Trades	\$17.86	48
Foundries and Machine Shops	\$13.00 to 14.41	55
<i>Cotton Industry</i>	8.97 to 11.03	58
Woolen and Worsted Industry	10.04 to 11.47	58
Hosiery and Knitted Goods	9.00 to 13.10	58
Printing Trades	16.00 to 18.30	48
Average of all	11.40 to 14.36	

Average yearly earnings in the cotton industry \$466.44 to \$573.56.

In 1912, Reverend George F. Kenngott published a book entitled, "The Record of a City." The schedule of the cost of living was identical with that used by the British Board of Trade in its investigation in the cities of the United States, and limits the inquiry to the income and expenditure of a wage-earning family and to the details of household expenditure of food, etc., for an ordinary week in 1909.

From the 287 budgets collected for the study, 87 were chosen "at random" and compiled in tabular form, showing the occupation of the head of the family, total number in the family, the average weekly income, and the expenditures for rent, food and fuel. Selecting from this table the budgets of those listed as "mill operatives" and "cotton mill," 32 families in all, the following interesting results are obtained:

"(Note: Weekly income includes earnings of the husband from principal occupation, earnings of the children, if any are at work, or any other regular income of the family.)"

THIRTY-TWO FAMILY BUDGETS

Expenditures

<i>Number in Family</i>	<i>Rent</i>	<i>Food, etc.</i>	<i>Total</i>	<i>Average Weekly Income</i>
Mill Operatives				
7	\$1.75	\$9.58	\$11.33	\$8.00*
5	2.00	10.09	12.09	14.00
5	2.00	6.29	8.29	7.50*
8	2.00	9.49	11.49	8.00*
6	1.75	11.13	12.88	8.00*
6	1.88	9.19	11.07	9.00*
7	2.25	11.73	13.98	10.00*
5	1.75	5.26	7.01	7.37
8	1.75	10.42	12.17	9.50*
7	2.75	10.42	13.17	17.00
Cotton Mill				
4	1.50	7.52	9.02	7.00*
4	.75	7.40	8.15	7.00*
5	.75	7.85	8.60	7.00*
4	1.13	7.33	8.46	7.50*
5	2.50	8.02	10.52	8.00*
4	1.13	7.39	8.52	8.00*
8	1.88	8.39	10.27	8.00*
5	1.25	8.32	9.57	8.00*
5	2.50	6.99	9.49	8.25*
6	2.00	9.72	11.72	8.50*
6	2.25	9.07	11.32	8.50*
7	2.25	8.54	10.79	8.75*
5	.75	8.68	9.43	9.00*
7	1.13	9.18	10.31	10.00*
7	1.75	9.87	11.62	11.00*
8	1.75	11.81	13.56	13.00*
6	1.13	12.11	13.24	13.50

<i>Number in Family</i>	<i>Rent</i>	<i>Food, etc.</i>	<i>Total</i>	<i>Average Weekly Income</i>
5	2.25	9.94	12.19	13.20
8	2.50	11.10	13.60	16.00
4	1.50	8.11	9.61	8.00*
4	1.00	9.29	10.29	10.00*
4	2.00	9.41	11.41	13.50

Average of Thirty-two Families

6	1.74	9.05	10.79	9.22*
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* Total expenditures exceeded weekly income.

An examination of the remainder of the eighty-seven budgets (55) with varied occupations, shows that in thirty-one of them the total expenditures exceeded the weekly income.

Average of Two Hundred and Eighty-Seven Families

5.4	2.02	11.19	13.21	15.34
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The outstanding feature of the foregoing tabulation is, of course, that in three-fourths of the budgets, the total weekly expenditures for rent, food, etc., exceeded the total amount of the entire family income. This condition might exist occasionally in the family exchequer, but that it should have existed simultaneously in nearly all of the families contributing budgets for a specified week must indicate some abnormal conditions. Furthermore, as it is not customary for merchants to extend indefinite credit there must have been other sources of revenue not indicated or the families might well be classed as "indigent." The conclusion seems to be that, even though stress is made of the fact that the budgets were collected by "reliable" persons, the results shown and conclusions drawn can not be accepted, on their face, with any degree of reliability as typical of the condition of wage earners.

Wonderment at this astounding system of finance grows

as further along in the study attention is drawn to the fact that deposits in "Lowell Banks gained more during the last decade than any of the other cities named, (i.e., Fall River, Cambridge, New Bedford, Lynn, Springfield, and Lawrence) both in the total and in the per capita savings." Depositors, of course, were of all occupations, but of the total number of over 71,000, it is safe to assume that mill operatives, who form a considerable part of the total population of Lowell, which at this time was slightly more than 100,000, were well represented among the depositors. In other words, consideration of all the facts set forth in the survey would make it appear that nearly 82 per cent of the families composing a so-called "typical" group were able to expend more than they earned while at the same time others in the same occupation put money in the bank. It might be argued that the discrepancy between income and expenditures had been the outgrowth of the increasing cost of living, but inasmuch as savings per capita increased also from year to year, this could not have been the reason for the difference.

It is fair to suppose that the studies of the British Board of Trade, being made when the idea of the cost of living was new, and its methods imperfectly developed, do not reveal the conditions as they really were and that Dr. Kenn-gott, with the combined disadvantage of following these figures and being a local observer, was unable to secure a true perspective. We know now, and possibly a trained observer might have discovered then, that the single wage earner in a family is the exception rather than the rule; that a group of unfortunates do not constitute a true picture of the general condition of the wage earners of a community; that a spread of saving bank deposits over a number approximating three-fourths of the population of the city and the fact that the average of these deposits is larger than in similar industrial cities would be a greater argu-

ment for general prosperity and satisfactory living conditions than the view presented in this book.

In further confirmation of the above, it is to be noted that in December, 1921, there were 131,853 depositors in Lowell banks with deposits of \$73,794,856, or an average of \$560, while on July 1, 1922, although the number of depositors had decreased some 6 per cent to 124,435, the amount on deposit was 2 per cent more or \$75,624,997, and the average deposit had increased some 7 per cent or to \$606.

Although the number of depositors exceeds the population of the city as given in the Census of 1920 and probably includes a number from the surrounding towns, it may also be true that it includes a considerable number of prosperous operatives who carry both national and savings bank deposits.

CHAPTER XVI

CONCLUSION

I have considered Lowell; its founders, its mills and its people as they have gone about their accustomed tasks, each adding his part to the building up of the city.

As this is an industrial story no account has been taken of the social, religious, and political events which have accompanied this industrial life. All these have been thoroughly considered and their value suggested in the several general works upon the subject of "Lowell." I am, however, adding a brief chronological table which is intended to mark the milestones of the city's progress. Not all of them are here, nor even some of those which may seem to be of the most importance. In fact those recorded are connected more or less intimately with my story.

I also can not refrain from expressing my appreciation of the part which Lowell has played in the history of our country: the men who went to the Mexican War, the large number who joined the colors during the Civil War, those who did their part in the Spanish War, and the thousands who carried on the high traditions of the city and their fathers in the World War.

I recall the leaders in social service and those who organized and developed the charitable institutions of the city. The priests and ministers of piety, of organizing ability and preaching fervor who "lured to higher thoughts and led the way." I think, too, of teachers whose capacity for instruction and leadership extended beyond their students and beyond the city.

All these and others unknown outside their small circles and yet well known to their friends, have united to make the legend of the city, "Art is the Handmaid of Human Good," a reality in the life story of "An Industrial Dream Come True."

CHAPTER XVII

MILESTONES

The present site of Lowell was formerly known as Wamesit and was the Indian capital of the tribes in north-eastern Massachusetts, southern Maine and New Hampshire. It had a population of about 12,000 (Indians).

1653 — John Eliot called, "The Apostle to the Indians," preached to the Indians at that part of Chelmsford now known as Lowell.

Plantation of Chelmsford laid out.

1674 — Population decreased to about 250 men besides women and children. (Indians)

1726 — The right of Indians to land became extinct.

1792 — An Act was passed on June 27th incorporating Dudley Atkins Tyng, William Coombs, Joseph Tyler, Nicholas Johnson, Joshua Carter and such others as might join them into "a body politic and corporate forever, by the name of the Proprietors of Locks and Canals on Merrimack River." The main object was to furnish a means of passing Pawtucket Falls; especially for rafts of logs.

1793 — Middlesex Canal connecting the Merrimack at Chelmsford with Boston Harbor was started.

1797 — The Canal around Pawtucket Falls was completed and the first boat passed through. This canal was one and one-half miles long, with four locks, to take care of a descent of thirty-two feet and cost \$50,000.

1801 — First carding machine in the country established by Moses Hale.

1804 — The Middlesex Canal connecting the Merrimack with Boston Harbor was completed.

1807 — The Pentucket Lodge of Masons was chartered.

1813 — Captain Phineas Whitney and Colonel Josiah Fletcher erected a cotton mill on the Concord River at East Chelmsford, 60 feet by 50 feet, cost \$2,500. This mill was sold in 1818 to Thomas Hurd who converted it into a woolen mill.

Moses Hale built a gun powder plant on the Concord River.

1820 — Thomas M. Clark, employed by certain Boston men to buy the Locks and Canals Corporation.

1821— Thomas M. Clark employed to buy farms in East Chelmsford (now Lowell). Total cost of the canal and land about \$100,000.

1822 — February, the Merrimack Manufacturing Company was incorporated and laid the foundation for the first mill. About \$120,000 was spent by this company enlarging the canal for power purposes. Part of this expenditure was for the dam erected at Pawtucket Falls.

1823 — The first cloth from the Merrimack Manufacturing Company was produced.

A large machine shop (later known as the Lowell Machine Shop) was started.

1824 — Ezra Worthen, first superintendent of the Merrimack Manufacturing Company, died.

1825 — January, the Legislature authorized the organization of the Locks and Canals Company so that they could purchase the real estate of the Merrimack Manufacturing Company and any other real estate up to the value of \$100,000. They were also authorized to lease or sell land and water power. This step was taken to separate the cotton mill of the Merrimack Manufacturing Company from the land and power developments.

1825 — January, the Hamilton Company was incorporated.

Middlesex Mechanics Association was formed for the assistance and improvement of the intelligent mechanics.

March 16, the first church was built by the Merrimack Manufacturing Company and consecrated by Bishop Griswold. Rev. Theodore Edson was the first Rector.

The first dividend of the Merrimack Manufacturing Company (ten per cent) was paid.

1826 — March 1, East Chelmsford was incorporated into a town called Lowell in honor of Francis Cabot Lowell.

1828 — The Appleton Company and the Lowell Company were incorporated.

March 11, the first bank in Lowell was established with a capital of \$100,000.

Population — 3,500.

Ring spindle invented by James Thorpe.

1829 — Commercial disturbances in Europe and several establishments operating with insufficient capital in this country were prostrated. Merrimack Company paid no dividends.

1830 — By reductions in terms made by the proprietors of the Locks and Canals Company, Amos and Abbott Lawrence were induced to enter the cotton mill business. As a consequence, Suffolk, Tremont and Lawrence Companies were formed.

Construction of the Western or Suffolk Canal was started.

1830 — June 5, the Merrimack Manufacturing Company was incorporated to manufacture wool.

The town hall was completed at a cost of \$30,000.

Population — 6,477.

Reaction began against high tariff policy enforced since 1824. The cotton industry was, however, strong enough to survive.

Boston and Lowell Railroad incorporated.

1831 — The Suffolk, Tremont and Lawrence Companies were incorporated.

The great depression of 1827-1828, when so many manufacturing companies became bankrupt, was followed by the rage for speculation in 1831. The fortunes of the young town suffered. Yet through all this the growth of Lowell was, in the main, steadily onward.

1832 — Population — 10,244.

The Western or Suffolk Canal completed at a cost of \$70,000.

1833 — The Lowell Bleachery was incorporated.

1834 — Belvidere annexed to Lowell.

James Abbot McNeill Whistler was born.

1835 — Boott Company was incorporated.

A public hall with library and reading rooms erected at a cost of \$20,000, most of which was subscribed by the mill.

Two large grammar schools were erected.

First railroad in the United States was opened.

Trains between Lowell and Boston.

Nashua and Lowell Railroad incorporated.

1836 — Population — 17,633. In ten years the population was multiplied sixfold.

Lowell became a city. First mayor was Dr. Elisha Bartlett. Second mayor was Honorable Luther Lawrence, brother to Abbott, Amos, William and Samuel.

1836 — June 10, Lowell Dispensary incorporated.

First strike in the United States was called by 3,000 factory girls. The cause and outcome of the strike is not recorded.

- 1836-1839 — Three years of severest depression, yet spindles rose from 130,000 to 163,000.
- 1837 — Large market house built 150 feet by 45 feet, at a cost of \$46,105. This building was three stories high and the second and third floors contained the County and Police Courtrooms.
- 1838 — Nashua and Lowell Railroad completed.
- 1839 — The Whitney mills were incorporated.
The C. P. Talbot & Company began the manufacture of chemicals.
A hospital was established.
- 1840 — The corporation hospital was incorporated. (First corporation hospital in the world.)
- 1843 — The Prescott Company was incorporated.
President Tyler visited Lowell.
- 1844 — First street paved.
- 1845 — At this time there were thirty-three mills beside print works with an invested capital of \$12,000,000, producing 1,459,100 yards of cloth per week.
- 1846 — Whipple's mills built.
- 1847 — President Polk visited Lowell.
- 1848 — On September 16, 1848, Lincoln addressed the Whigs of Lowell in the City Hall. He was then a Representative in Congress from Illinois.
- 1849 — Gold was discovered in California. Many Lowell men joined the rush to the west coast. Butler said that this was "the darkest time ever known in Lowell. We have lost 1,500 young men, the best, most energetic and enterprising of our citizens."
- Richard Kitson came from England and began the manufacture of needle pointed card clothing.
- 1850 — Gas was first introduced in the city.
Number of spindles 300,000.

- 1851 — Middlesex Canal discontinued.
- 1852 — George Wellman completed the first working model of the self stop card stripper.
September 21, the corporations reduced the hours of labor to eleven per day.
- 1853 — President Pierce visited Lowell several times between 1853-1857.
- 1854 — George Wellman offered to sell to the corporations in Lowell the exclusive rights to his invention of the self stop card stripper for \$3,000. After consulting together, the agents of the various mills declined — “stupidly,” Cowley says, inasmuch as the average cost of stripping a card by hand was \$300 yearly, all of which was saved by the invention, and, furthermore, the application of the invention to each machine involved an outlay of less than \$60. It also saved from one-fourth to one-eighth of a cent per pound on raw cotton.
- 1856 — Lowell had twelve great manufacturing corporations with fifty mills. Aggregate capital,—\$14,000,000.
Twice as many spindles as in 1845 (about 350,000).
Total number of looms — 12,000.
Cotton used yearly — 36,000,000 pounds.
Cotton cloth produced — 80,000,000 yards.
- 1859 — Cardinal O’Connell was born in Lowell.
- 1860 — Number of spindles — 400,000.
- 1861-1865 — Civil War cut off supplies of raw cotton and two-thirds of the spindles were idle.
- 1863 — The Lowell Horse (street) Railway incorporated.
- 1867 — Lowell felting mills were incorporated.
- 1869 — The Lowell Hosiery Company was incorporated.
- 1870 — The following manufacturing corporations were in existence:

Lowell Machine Shop, Wamesit Steam Mill, Appleton, Boott, Hamilton, Lawrence, Lowell, Massachusetts, Merrimack, Middlesex, Suffolk, Tremont, Belvidere Woolen Mills, Lowell Bleachery and Lowell Hosiery Company.

1871 — Fire alarm system installed.

September 25, mill operatives were allowed one hour for the noon time meal instead of three-quarters of an hour.

1874 — February 16, strike by laborers on Lowell and Andover Railroad.

Kitson Machine Company organized.

1875 — Mule spinners' strike ended May 23.

1877 — Shaw Stocking Company organized and incorporated.

1878 — December 30, Electric lights tried in Merrimack Mills.

1878 — Lowell District Telephone Company began operations with 80 subscribers.

1879 — August 23, telephone to Boston completed.

1882 — The Lowell Electric Light Company began operation with subscriptions for sixteen lights.

1883 — Lamson Cash Railway Company incorporated.

1890 — Population — 77,696.

1892 — Electric car service established.

1893 — Employed in mills and work shops, 30,120.

Textile, 24,172; Leather, 560; Machine, 2,838; Cartridges, paper, etc., 2,500; Wood, 1,050.

1893 — Lowell Waste Company incorporated.

1895 — Lowell Textile School incorporated.

1897 — Lowell Textile School opened for instruction.

1907 — Waterhead Mills incorporated.

1912 — Columbia Textile Company incorporated.

1913 — International Cotton Mills incorporated.

1919 — Waterside Mills incorporated.

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